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JUNE TWENTY-FIRST
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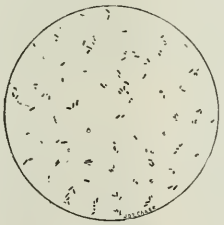

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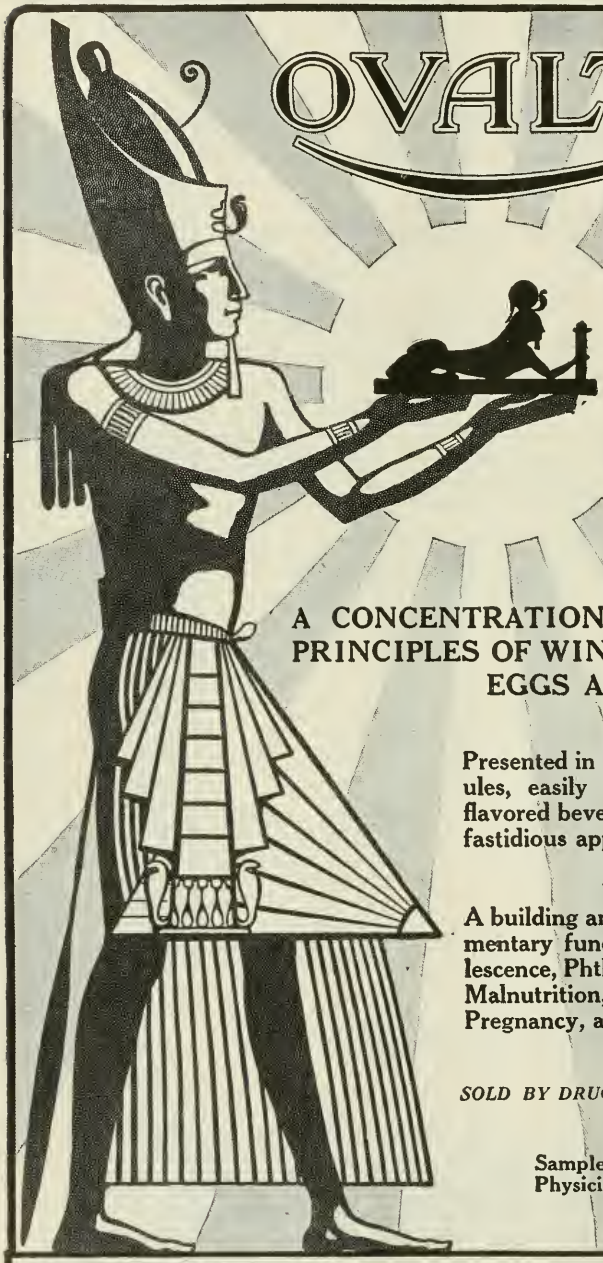

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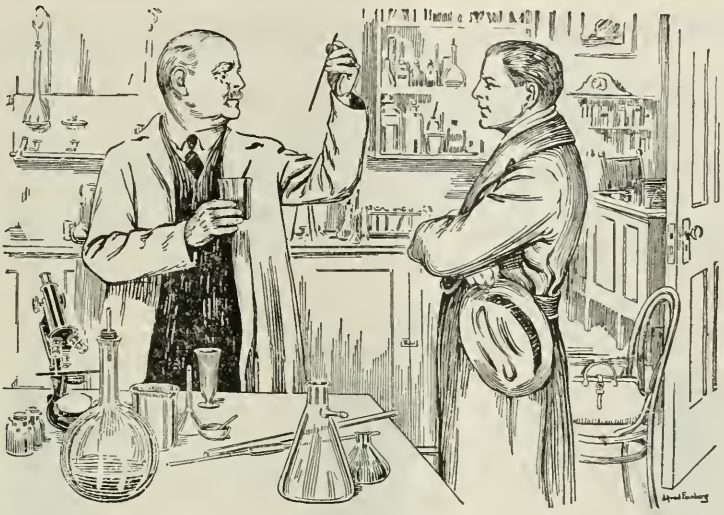

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DR. SENIOR: "New to most of us—yes. I have been confirming, by actual laboratory experiment, a statement made in Lewkowitsch's Book, Chemical Technology and Analysis of Fats and Waxes (page 245), which shows that heat is generated and practically available, in a mixture of 42 parts Water and 58 parts of c. p. Glycerine."

DR. JUNIOR: "Of course we know that all chemical action produces heat——"

DR. SENIOR: "Exactly. But many of us would think a mixture of Glycerine and Water a simple mechanical combination; never realizing that there is chemical combination also."

DR. JUNIOR: "Well, is the degree of heat of such amount as to be of use, therapeutically?"

DR. SENIOR: "Nine degrees in a few hours is something, eh?"

DR. JUNIOR: "Rather——yes."

DR. SENIOR: "Now, I understand how Antiphlogistine, which contains a large amount of c. p. Glycerine, not only retains heat but actually generates heat."

DR. JUNIOR: "But where is the water, Doctor? Antiphlogistine contains no water——"

DR. SENIOR: "That is right, but the osmotic action of the Antiphlogistine, whereby the glycerine of the application interchanges with the water of the tissues, keeps up a steady, blessed heat generation as long as the process continues—until saturation is met. Antiphlogistine, the scientific product of a scientific laboratory, is of practical, remedial application."

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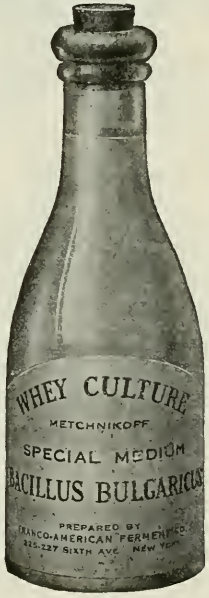

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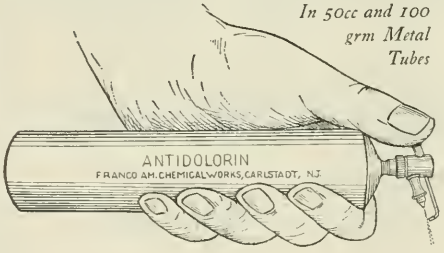

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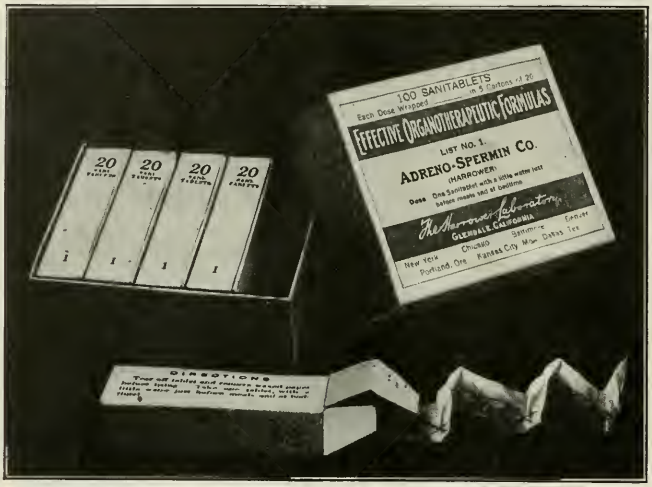

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VOL. CXV, No. 12 NEW YORK, WEDNESDAY, JUNE 21, 1922 WHOLE No. 2235

Modern Commentaries on Hippocrates

Dislocations and Fractures

By JONATHAN WRIGHT, M.D.,
Pleasantville, N. Y.

There has been occasion several times in the course of the essays contributed to this journal, as well as elsewhere (1) more pointedly dwelt upon, to draw attention to an affection of the throat and neck mentioned in several places in the books, both genuine and those supposed to be the work of another author, of the Hippocratic Corpus, whose pathology involved a supposed dislocation of a cervical vertebra, the vertebra dentata. "Those who draw their breath, whose voice is extinguished, whose vertebra is sunken, have toward the end breathing like a man who gasps" (2). "In the course of a fever, when the neck becomes suddenly distorted and the patient can hardly swallow and there is no tumefaction, it is fatal" (3). In this last we can scarcely fail to see the mind of the observer fixed on the mistaken pathological conception. His clinical observation is warped by the theory of cervical anatomy and pathology which dwells in his mind. Perhaps we would not be warranted in drawing the inference of the existence of this mistake as a widely entertained medical idea in the Hippocratic epoch if we had to depend on the testimony of the *Prorrhetics*, the *Coan Prenotions*, the II Epidemics alone, as by most critics there are not supposed to be the work of Hippocrates II, but in the *Articulations* (4), one of the few books all critics, so far as I know, ascribe to the Master, it is also referred to. Remarkable as it may seem modern paleographers as late as Littré and Adams entertained the same error and discussed throat affections from that point of view.

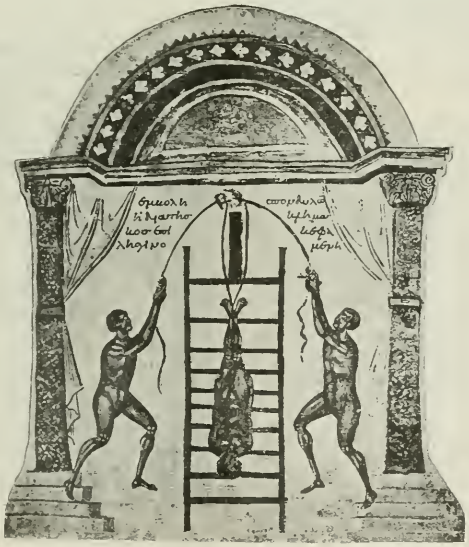

FIG. 1.—Treatment for a dislocated vertebra. (From Apollonius of Citium's commentary on Hippocrates.)

In reading the *Articulations* of Hippocrates the modern student is struck by what seems to him the disproportionate space given in the treatise to dislocations or deviations of the spinal column. This, too, in a treatise which, on the whole, deals most fully of any of them with one single field of surgery, as it is divided today. Adams declared (5) that up to his time (1796-1861) Hippocrates in the *Articulations* had given a fuller and more complete history of everything relating to dislocations, especially of the hip joint, than was to be found in any other work and he insists that no systematic writer on surgery has given so comprehensive a view of the subject of dislocations in all its bearings. If his work on dislocations of the hip and on club foot was of value to the surgery of two or three generations ago, his treatment of spinal affections, if not very

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instructive for the modern orthopedist, is still interesting and it attracted the attention of his earliest commentators, among whom was Apollonius of Citium or Kiton. There are a large number of Apollonii in the annals of ancient medicine. Celsus mentions (6) two and in Smith's *Dictionary* there

Fig. 2.—Treatment for a dislocated thigh bone. (From Apollonius of Citium's commentary on Hippocrates.)

is a list of twenty-two of them. This Apollonius, however, was supposed to have lived in the time of Cicero and we have three books of his commentaries on the *Articulations* of Hippocrates. The illustrations given here (Figs. 1, 2, 3 and 4), derived originally from an old manuscript, we may well suspect we owe at least chiefly to the inspiration of some copyist later than the time of Cicero. The archeologist, we may conjecture, would hardly regard the background architecture of the drawings to be as early as that. However that may be, it is important to note in Hippocrates that he looks with disfavor on anything so spectacular, so vigorous and on the whole so inefficient as this reproduction would indicate. Indeed he specifically condemns some such procedure.

Apropos of his ethical distaste for anything so liable to excite the wonder and admiration of the gaping crowd of spectators we can imagine gathering at the foot of the step of this portal, too gorgeous for Cicero's day, to the immense profit of the orthopedists bank account, we find him in the *Articulations* (47) speaking of his failures, as in more than one place of the genuine works we take note of the same candor: "I have intentionally written the foregoing for it is a valuable acquisition to know what attempts have succeeded and what have failed." Indeed is there anything in the whole domain of medicine more valuable than this? There is only one thing more important than this. It is the possession of that humility of soul the Master so constantly exhibits in the face of truth, of truth so scantily revealed to us all. This humble earnestness, no more ready to show us his triumphs than his mortifications, is in contrast to the spirit of Galen, commenting on one such passage in Hippocrates: "Why bother about that, the man died." The jibe of Asclepiades, that Hippocrates's therapeutics was a contemplation of death falls flat on us, so jaded are we with the sappy, disgusting, discouraging addiction of men exclusively to their cheerful yesterdays. Of such may be the kingdom of heaven, but Hippocrates knew this world is different. We have in the genuine books his successes and failures without the glimmer of a thought of himself. Let us remember this when we read of the epidemic of paralysis in Thasos and the frequency with which the odontoid was out of place in sore throat. Without this candor medical history is a child's nursery tale, but with it for the medical man it is indeed a priceless acquisition.

The dislocation of the odontoid process and the general tendency toward an exaggerated view of the frequency of spinal deformity were errors doubtless due in part to the great variation in the normal curvatures of the spine. Indeed we find he appreciates the fact (46) that it is rare that "one or more of the vertebræ torn from their articulations experience much of a displacement," but it is clear that he regards minor displacements as not infrequent and perhaps in this category he placed the supposed dis-

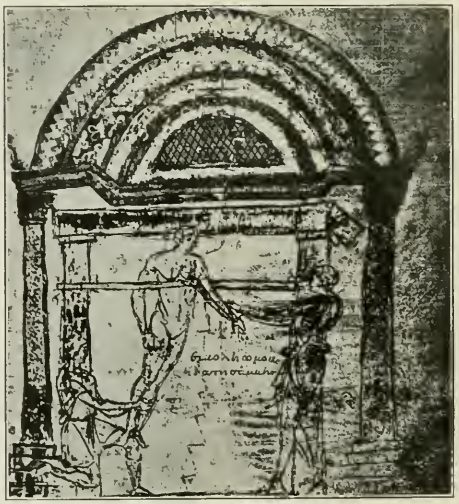


Fig. 3.—The replacement of a dislocated shoulder. (From Apollonius of Citium's commentary on Hippocrates.)

locations of the odontoid. He is even very severe on the osteopaths of his day who are always finding vertebræ to replace and it may well have been more of a fad in his day even than in our own.

As to some extent shown in Fig. 1 the reduction of dislocations of the hip comprised the hanging

of the man head downwards between supports. Pressure of the operator's arm on the perineum and the manipulation of the free hand were used to force the head of the femur into the acetabulum. A less ostentatious procedure and a more efficient apparatus, in Hippocrates's opinion, seems to have been

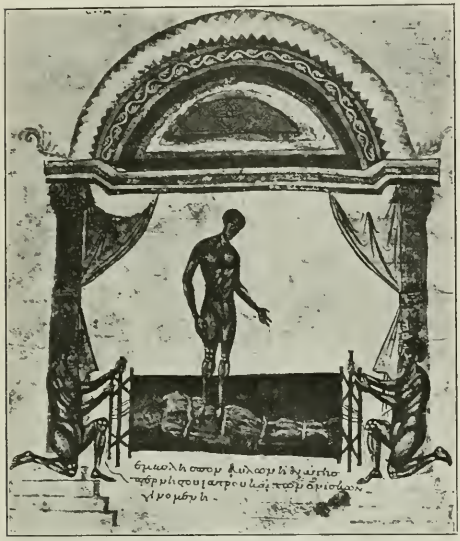


FIG. 4.—Treading the back for dislocated vertebra, at the same time that the backbone is stretched by extending the movable bed. (From Apollonius of Citium's commentary on Hippocrates.)

a frame some nine feet long in which the patient lay, provided with winches and pulleys and levers for extension and counterextension. Some of these devices, as they appealed to the imagination of the translator and his expert advisers, are reproduced here from Littré's fourth volume, Figs. 5, 6 and 7. Fig. 8 shows another way of using the ladder in hip dislocations. These and other forms of apparatus or something like them were employed by Hippocrates, but he admits the efficacy often of much less formidable devices and less complex procedures.

It is in *Articulations* (1) we get a hint that perhaps Galen was right when he said the Æsculapians practiced dissections in their youthful apprenticeships and knew anatomy so much as a matter of course that they seldom mentioned it in their writings; that it was transmitted by word of mouth and not by books as a rule; but we are privileged to make the largest sort of allowance for this, which after all could hardly have been more than an inference from such passages as the one just referred and a very few others. "If the tip of the shoulder is stripped of the flesh, where the muscle is spread out, if the tendon which belongs to the axilla, the clavicle and the chest, is removed, the head of the humerus will appear," plainly projecting forwards (2) in forward dislocation. In speaking of the difficulties of reducing old dislocations of the shoulder (7) he ascribes the cause in some cases to "the invasion of the articular cavity by flesh." It would be quite captious and regardless of testimony of the most direct kind to deny that at least occasional postmortem examinations were made by the ancient Greeks. If we have no ground to believe their knowledge of anatomy was great or that dissection of the dead body was a frequent practice, it is quite impossible to maintain an attitude of total skepticism on the subject.

With this in mind, after reading the *Articulations* one is astonished in reading the *Fractures* and indeed in reading the paragraphs of the *Articulations* devoted to compound dislocations, to see surgeons in the time of Hippocrates so helpless in the face of the latter and compound fractures. So helpless were they that the best treatment they knew was to bandage the protruding bone in the wound and leave it to take care of itself. Many very primitive modern people in remote savage tribes, apparently uninstructed in the surgery of civilization, do not hesitate to perform amputation in such conditions, or in others in which it is indicated, but this seems to have been a surgical procedure unknown to Hippocrates.

The reason for this decidedly striking gap in the evolution of this branch of the surgical art, besides the embarrassment of hemorrhage, is entirely conjectural. Possibly under the conditions obtaining in Greek civilization pyemia and tetanus, "spasms" he constantly alludes to, were much more frequent than under the conditions in which much more primitive men live, less subject to the dangers of crowded habitations and the much used soil of cities and the also primitive state of hygienic science. In one passage of *Articulations* (68) a favorable prog-

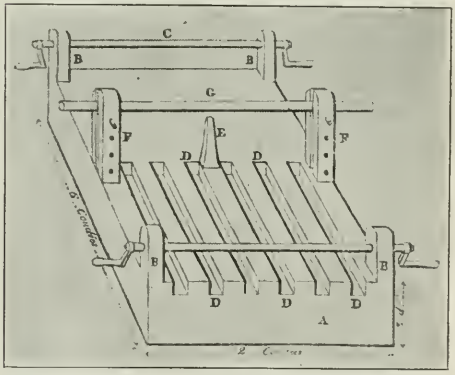
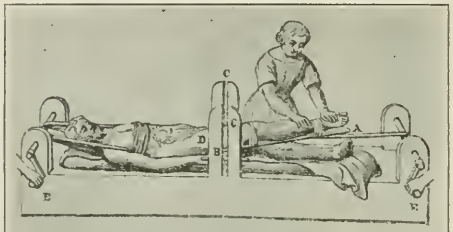


FIG. 5.—Detailed diagram of traction apparatus used in the application of extension.

nosis is given of the accidental severing of the fingers or the hand, but in the next section (69) for gangrene it is recommended to amputate through the dead parts so the patient should feel no pain, as this may bring on fainting and cause sudden death. His counsel tends toward allowing the gangrenous part

to separate spontaneously, when one is confronted with the compound dislocations of the larger joints. As to the ends of the bones projecting "let another physician reduce them if he will," though "the patient will die if the parts are left thus reduced," from convulsions or gangrene and it is to be inferred

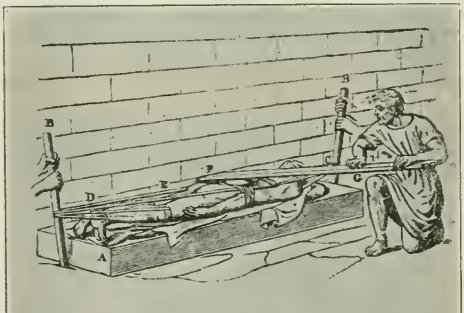


A Planchette suffisamment longue mise sous le membre luxé.
B Traverse en bois placée entre les supports.
CC Supports.
D Membre luxé étendu sur la planchette et passé par dessus la traverse.
EE Extension et contre-extension.

Fig. 6.—Diagram and directions for the application of extension and counterextension.

the results are scarcely better from leaving them alone.

I cannot but feel that this anomalous state of surgical practice where so much was done by bloodless surgery, rests fundamentally on a very great but a



A Madrier sur lequel se pratiquent l'extension et la contre-extension.
BB Bois en forme de pilon avec lesquels on pratique l'extension et la contre-extension.
C Liens passés autour de la poitrine et sous les aisselles, et attachés au pilon.
D Liens passés au-dessus des genoux et des talons, et attachés au pilon.
E Liens passés autour des lombes et attachés au pilon.
F Entaille pratiquée dans la muraille, un peu au-dessous du niveau de l'échine; un des bouts de la planche y est engagé.
G Planche avec laquelle on exerce la compression sur le lieu de la luxation.

Fig. 7.—Diagrammatic plan with explanatory text showing ways and means of applying extension and counterextension.

very natural error which appeared early in the statutes of states rising into civilization. On the stelê of Hammurabi, in the old Egyptian codes, in the Zend Avesta, he who took the knife in hand to save the life of a fellow being lost his own in case of failure, if it was a high born man, or if the patient lost his eye so did the operator. An eye for an eye and a tooth for a tooth reached out over the boundary of savage life and was crystallized in the laws of the primitive state whose primary object was to throw safeguards around the lives of its citizens. Where this social codification had not reached a recorded form, less protection was attempted for the members of the tribe and where no such inevitability as the arm of the law represented is in prospect the primitive surgeon still takes his chances. We see therefore how a lack of discrimination in legislation may have impeded the use of the knife.

Fig. 8.—Apparatus for extension of the lower extremity. This extension is effected by the attachment to the limb of a basket filled with stones.

The innocent shedding of blood in many tribes was no excuse for the death even of a brother. Herodotus tells many such a tale taken from the traditions of a race far beyond the beginning point of social organization. In many tribes, however, this blood feud arising from innocent blood shedding does not exist, but I fancy that Hippocratic surgical practice lay under some such ban or perhaps only under the social sentiment which gave rise to such impediments in the legislation of earlier civilizations.

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The Tongue as a Source of Systemic Infection*

By THOMAS R. FRENCH, M.D.,
Brooklyn, N. Y.

During the inquisitive wanderings of the tonsil lamp about the lymphoid coverings of the laryngopharynx a year or so ago, our attention was attracted to the base of the tongue by the color signs in transillumination indicating the presence within the tissues of harbored material which is known to be capable of giving rise to systemic infection. As a more searching scrutiny but confirmed our growing belief that the tissues in question were of a similar character to those of the branches of the faucial tonsils, we were led by the seeming promise of further helpful revelations into a more or less careful study of the whole of the dorsum of the tongue.

The first glimpses of a new field of study or endeavor are, of necessity, caught somewhat out of focus and, therefore, a report of our early impressions of a rather inaccessible but seemingly rich field of infection must be regarded as of a preliminary nature. We also wish it to be understood at the outset that though we have made diligent efforts to penetrate some of the mysteries of the lymphoid tissues covering the base of the tongue, this study has, nevertheless, been made almost entirely from a clinical and not from a minute anatomical or morbid histological standpoint.

The subject of this communication is an old, old form over which we have but endeavored to drape a modernly shaped robe. Indeed, the especial features of it to which attention is particularly directed are perhaps the only ones which justify the presentation of this report—that the lymphoid structures on the base of the tongue, which in a general way are described in practically every textbook of anatomy and of diseases of the nose and throat, and also the white coating on the oral dorsum of the tongue, are common and at times prolific sources of systemic disorders produced by infection.

The aggregation of structural masses of lymphoid tissue on the base of the tongue should properly be spoken of as the lingual tonsil, for that body has been described as occasionally extending outward as far as the inferior poles of the faucial tonsils. It is our belief, however, that such an extension occurs in every case in which those tissues are developed beyond the normal state, and as the lingual tonsil is generally understood to mean a concrete, definitely outlined lymphoid body occupying the center of the base of the tongue, we will employ the term *lingual lymphoid apron* in referring to that area, because we do not doubt that, for at least this presentation, it will convey the clearest impression of the broad expanse of diseased tissues to be discussed in this paper.

The straight, cleancut inner wall of an enucleated lingual branch of a faucial tonsil gave us the first clue to the existence of a juxtaposed layer of lymphoid tissue of only a little less thickness than the branch. Applying this knowledge to a series of studies with a tonsil lamp, of a size which would sink deeply into soft tissues, it was quickly revealed that in every one of the large number of adult subjects examined there was a layer of developed lymphoid tissue extending entirely across the base of the tongue between the borders formed by the lingual branches of the faucial tonsils. The thickness of this layer as measured by the tonsil lamp, and afterward verified by dissection, was found to vary in itself and in different subjects from about a sixteenth to a quarter of an inch or more. The cleared mysteries of a former tonsilloscopic study which disclosed the branches of the faucial tonsils and their numerous rentention crypts, aided greatly in the exploitation of this, to us, new field, for the deduction seemed logical that as this tissue was manifestly lymphoid in character and gave the same tonsilloscopic color signs as those which accurately indicate the presence of filled retention crypts in the tonsil branches, the same reason for their production must necessarily exist in both. The reasoning proved to be correct, for the application of the means which were used in disclosing the crypts in the branches of the faucial tonsils, that is, a concentrated beam from a powerful lamp, a large warmed magnifying lens and a searcher, soon disclosed the presence of small mouths of crypts on the surface of this wide lymphoid field. The proof, however, that they were openings of retention crypts was quickly forthcoming by the observed expulsion of exudate while pressure was being made with a curette close to the cryptic openings.

GENERAL ANATOMY.

When this area is viewed directly by deep depression of the tongue or indirectly in the laryngeal mirror, it appears in shape somewhat like a shield covering all that part of the tongue which, when the organ is at rest in the floor of the mouth, is out of the line of direct vision. The use of the ordinary tongue spatula will, as a rule, disclose only its upper margin but a much better view of it can be obtained by drawing out the tongue. On closer inspection the surface of this lymphoid field suggests the appearance of an undulated plot of rough grass surrounded below and at the sides by a raised coping, the coping being the lingual branches of the faucial tonsils.

When viewed from behind (Fig. 1) the whole of this flat mass may be likened to a bat or butterfly with outstretched wings; that is, there is a narrow central section lying between two longitudinal creases, and outer or winglike sections mounding up from the creases on either side. In the lower part of the central section is very frequently seen a concrete, more or less definitely outlined mass of the same character of tissue, which is the structure commonly spoken of as the lingual tonsil. As we now know that the lingual branches of the faucial tonsils are set into the outer edges of the lingual lymphoid apron as a piece is set into a picture puzzle, it is a fair inference that a similar sharply defined relationship

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will be found to exist between the central mass, which is usually regarded as the lingual tonsil, and the lateral areas or wings of the lymphoid apron. When the whole of the lingual blanket is thin and but little developed its surface presents a smooth appearance but when it is well developed the lymphoid mass is thrown into heavy folds with contact creases between them which are capable of entrapping and retaining the secretions of the throat.

Crypts.

The crypts of the lymphoid apron are quite numerous. Some of their openings are slits leading to pocketlike cavities with opposing walls. Even the tops of the circumvallate papillæ contain such pocket crypts. Many minute crypts open upon the floors of the creases. A great many more of the superficially placed crypts are found in the border structure than elsewhere and some of them run under the surface like wall pockets. While many of the crypts are capable of retaining small quantities of the material which finds an exit through them, the amount so retained must certainly occasion far less mischief than the accumulation of exudate which is caught and more or less permanently retained by the contact creases in the apron and also by the entrapping papillæ on the dorsum of the tongue—which presently will be considered.

A network of superficially placed veins, in size somewhat corresponding to the degree of the lymphoid hypertrophy, is spread over the entire lingual blanket and when the lymphoid tissue is fully developed the veins are more than likely to become the seat of varicosities.

White Coating of the Tongue.

On the top of that portion of the tongue which, when the mouth is open can be seen directly, are hundreds of small conical papillæ, each having a vasculonervous core, extending in lines parallel with the circumvallate papillæ from just in front of the circumvallæ to the edges and apex of the tongue. Back of those rows or lines and between them and the circumvallæ, is a diamondshaped area of irregularly placed conical papillæ, of relatively large size, springing from a deeply folded surface, full of creases and sunken spaces, which makes it an especially commodious reservoir for retained secretions from the throat. And immediately back of the circumvallæ there is on each side a narrow field of the same variety of irregularly placed and relatively large sized conical papillæ. According to Harrison Allen's *Human Anatomy*, (1) all of the conical papillæ are covered with hairlike extensions of epithelial cells; hence the name often given them of *filiform* papillæ. This cactuslike formation of the papillæ readily explains the presence on the surface of the top of the tongue of an apparently permanent layer of cheesy mould representing what is known as the white coating of the tongue, for the filiform extensions of the papillæ make the entire surface a veritable tanglefoot for the necrotic material worked up from the lymphoid apron, or which is deposited from other sources in the throat. This material is entrapped and enmeshed in the tangling filiform extensions and forms upon the top of each of the papillæ as a hood or cap of cheesy mould. These hoods of foreign material become so closely incorporated with the tissues of the papillæ that they resist the friction of the passage of fluids and food and cannot be dislodged with a probe or even the edge of a blunt instrument. Indeed, they cannot be dislodged at all but must be shaved off as wax is shaved from the end of a candle. The top of the tongue is covered with a thousand of these small hoods, arranged in lines like strings of miniature pearls, which collectively form a thin layer of cheesy mould overspreading the entire surface. This thin layer constitutes the white coating, or fur, of the tongue, and we now know that this coating is always of a pathogenic nature

So, we see that the lingual apron contains crypts and is a wellspring of exuding necrotic tissue. We also see that it provides many creases of varying depths which act as retention cavities, and we see still further that the surface of the top of the tongue provides traps for the entanglement and retention of the escaped contents of crypts as well as the ingesta of food in the mouth. The tongue is, therefore, seen to secrete necrotic material from the crypts of its apron, to afford reservoirs for the accumulated exudate in the creases of the apron and about the circumvallate papillæ, and also to afford storehouses for the same material on the tops of the numerous filiform papillæ.

While the "fur" on the tongue is not enclosed in crypts but lies spread out upon the surface, the bacteria, or their poisons, contained in it are apparently as capable of finding their way to remote parts to produce infection as those within its feeder—the lymphoid apron. It must, however, be said, that the pathogenic bacteria in the necrotic material on and in the tongue are as a rule fewer in number than those found in the foreign material recovered from the deep recesses of the faucial tonsils, but the question of relative pathogenicity has yet to be determined.

It has long been the custom to regard the white coating of the tongue as a diagnostic sign of certain digestive disorders or as pertaining to general states of the health. That it is an effect of indigestion seems to have been repeatedly disproved by the relief of many symptoms of indigestion through the removal of the coating and the exudate from the apron. A white coating on the tongue would, therefore, seem to indicate the presence in that locality of a cause and not an affect of at least chronic systemic diseases, and even though our observations have been limited to a hundred and twenty cases we, nevertheless, believe it to be safe teaching to say that except in febrile states a uniformly white furred tongue may be regarded as a reliable indication of the existence of a diseased condition of the lingual lymphoid apron, and that the extent and density of the fur is a fairly accurate indicator of the extent of disease in the lymphoid tissue on the base of the tongue.

When a broad field of lingual exudate has been long exposed to the air, it occasionally undergoes putrefactive changes and gives rise to an offensive breath. Of course this is not the only area in which cryptic secretions become putrid and give offense but we have repeatedly been able to prove that the source may be entirely confined to this particular region by cleaning the tongue exclusively with the result of extinguishing the odor.

CHARACTER OF EXUDATE AND BACTERIA.

The exudate recovered from the crypts and retention pockets of the apron and also that which is shaved from the surface of the dorsum of the tongue, is almost invariably of a cheesy character. Occasionally it appears much like mucopus with flocculæ of cheesy matter floating in it, but in almost every case it has either the appearance of pus, thin cream, fresh white paint, half melted ice cream or cream cheese. We have removed such material from the crypts of the apron and the surface of the oral dorsum of the tongue, in about a hundred and twenty subjects, varying in age from eight to eighty years. Most of them were patients in our private practice who had sought relief from symptoms which were believed to be due to infection. Some of them, however, were devoid of symptoms but placed themselves at our disposal solely for the purpose of supplying data for a scientific test. Characteristic necrotic material was recovered from the apron and the top of the tongue in every one of the subjects and each collection yielded a pathogene on culture. The Staphylococcus pyogenes aureus or albus was present in every culture and the hemolytic streptococcus, the Streptococcus viridans or the pneumococcus in about twenty per cent. of the cases. In a number of the cultures bacilli of Vincent's angina also were present. These facts were obtained from a group of subjects which was not selective and they must, therefore, be regarded as at least significant of the extent to which this infective condition has been found to prevail among members of the human family.

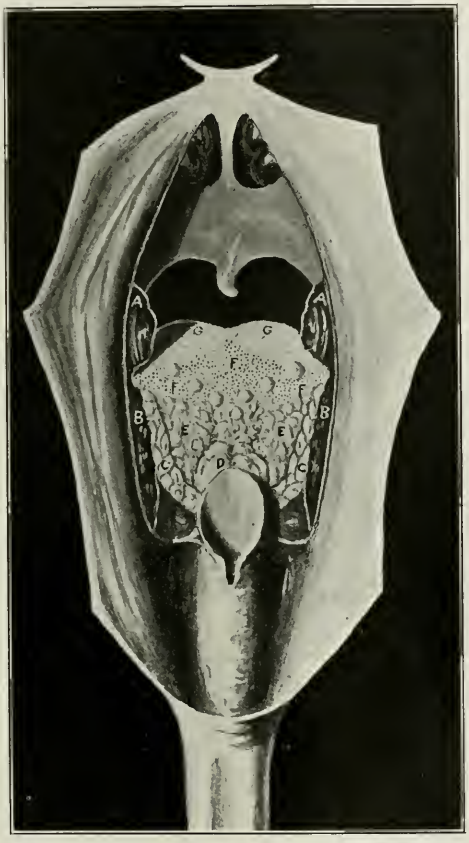

FIG. 1.—Diagrammatic drawing of the pharynx as it would appear if laid open and viewed from the back of the neck. A.A., faucial tonsils; B.B., pharyngeal branches of the faucial tonsils; C.C., lingual branches of the faucial tonsils; D., lingual tonsil; E.E., blanket of lymphoid tissue which together with the lingual tonsil and the lingual branches of the faucial tonsils constitute the lymphoid apron on the base of the tongue; F.F.F., dotted area showing irregularly placed large filiform papillæ in front of and behind the circumvallate papillæ; G.G., filiform papillæ in oblique lines on the oral dorsum of the tongue; F.F.F. and G.G., show the areas of the white coating of the tongue.

POSSIBLE REMOVAL OF LINGUAL BRANCHES.

A study of enucleated lingual branches of the faucial tonsils shows that they are provided with well developed underlying capsules and also that these border structures are set up against the edges of the apron as sharply as tiles are set against other tiles in cement. This knowledge affords excellent reasons for believing that the whole of the apron has beneath it a limiting membrane or capsule which would make possible its complete removal from the tongue and so permanently dispose of its numerous collections of baneful bacteria. Unless, however, accidental stripping of this structure from the tongue should demonstrate the feasibility of dispensing with such a protective layer and that subsequent dryness would not occasion perpetual distress to the patient, as we fancy it would, we doubt if a radical disposal of the whole of that wide lymphoid blanket should at present be seriously considered. We are not yet in a position to express an opinion of the effect in dryness of the enucleation of the lingual branches of the faucial tonsils which form the border of the apron, but we believe it highly probable that as those structures are the greatest offenders by containing the largest number of crypts, we will soon be able to feel our way to a decision in this important matter.

CURETTAGE.

Very happily, however, the conservative method of curettage is admirably adapted to the removal of the contents of the crypts and pockets in this situation, as well as to the removal of the white coating of the tongue. As the lymphoid apron is a broad veneer of yielding tissue of practically uniform thickness, lying flat upon the muscular structure of the base of the tongue, it lends itself far better to exploitation, evacuation and surface cleaning by curettage than do any of the other lymphoid or other tissues in the pharynx. Though the ordinary curettes failed to meet the need, the sideway sweeps of their shanks soon revealed the paths which must be followed to secure the release of the trapped detritus. The way being pointed out we applied the edge of a bent sharp submucous resection elevator, pressed it firmly into the soft lymphoid blanket and drew it obliquely upward, with the pleasing result of rolling the

necrotic material up upon the flat of the blade as snow is rolled up upon the board of a snow scraper. The *lingual plane*, which was evolved from the sharp elevator and is now being used, (Fig. 2) differs from the early models in that the inner flat surfaces are laid back at angles of 30° and 40°, the end is curved at a slightly acute angle and the shank is bent to fit over the tongue.

To this instrument every lingual apron to which it has been applied has quickly yielded varying quantities of necrotic material, and not uncommonly

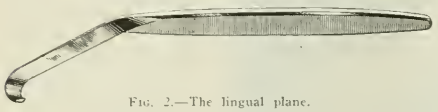

Fig. 2.—The lingual plane.

when the accumulated results of the shavings of the dorsum of the tongue are added, the quantity in a seance amounts to a cubic centimeter or more. Following the movements of the plane in the image of the lingual field reflected in the laryngeal mirror, gives by far the best results. Without the mirror the nodular eminences alone are scraped and perhaps injured and the creases in which much of the broken down material lies are left untouched.

As both hands of the operator are fully occupied in the procedure about to be described, the tongue must meanwhile be held out by the patient. Then, after a surface application of a four per cent. solution of cocaine to the apron only, followed by the irrigation of the whole length of the tongue with a fifty per cent. solution of alcohol, the plane is passed down over the left side of the mound of the tongue and while its edge is being pressed firmly into the border of the apron it is swept for a half inch or so toward the opposite side of the throat. The instrument is then drawn forward and out of the mouth gathering on its way the material which was expressed and dislodged from the section it had covered. The collections adhere to the plane until scraped off over the edge of a tongue spatula. The remainder of the apron should then be curetted by repetitions of the movements just described until it is felt that the whole of the lingual blanket has been covered. Around the median rhaphe, for an inch or so in front of the lines of the circumvallæ, the filiform papillæ are larger and are covered with hoods of foreign matter which are so much thicker than those upon the neighboring papillæ, that they coalesce to make a broad and almost solid patch of cheesy mould which, in especially large quantities, can readily be removed from the soggy surface. While the patient continues to hold out the tongue, the lingual plane should next and finally be swept over the oral dorsum of the tongue from the anterior edge of the apron forward toward the tip, by a series of sweeps which perhaps can best be compared to the action of a dull drawplane in removing bark from a seasoned log, or of a lawn mower over a level plot of grass, except, of course, that the plane does not actually cut the living tissues. As in addition to the cheesy hoods of the papillæ the shaving plane must in this region gather up a considerable quantity of buccal secretions overlying the coating of fur, it is often most convenient to hold the side of a spoon against the dorsum of the tongue, near its tip, to act as a runway depository for the copious collections.

While a dull plane will remove much of the necrotic material from the apron, and is the safest to use in that area, it will have but little effect upon the coating of the tongue. A plane which is too sharp will injure the tissues and excite reactions. A plane which, however, is just sharp enough will shave the hoods of mould, together with their filiform traps, from the tops of the papillæ without injuring the tissues. This, however, can only be accomplished by repeatedly drawing the plane over the surface of the tongue as a carpenter's plane is drawn over the surface of a board. If an attempt is made to carry out this procedure thoroughly in one seance, a reaction of myositic pain in various parts of the body is very apt to follow and continue for a day or two. It is, therefore, best to proceed slowly but, nevertheless, to persist in ridding the surface of the dorsum of the tongue of its original pathogenic coating, for it is now manifest that the original coating down to the tops of the papillæ must, as nearly as possible, be removed in order to permanently eliminate a source of infection from the tongue. It is somewhat difficult to shave the hoods from the papillæ just back of the circumvallæ without injuring those larger and firmer structures and, therefore, the effort should always be made with the aid of the mirror. Patients rarely experience even the slightest local discomfort after the proper employment of the lingual plane.

Before and after curettage, and between the seances at home, the use of alcohol in from forty per cent. to fifty per cent. solutions as a mouth wash will assist in cleansing the surfaces and in destroying the bacterial content of the cheesy mantle lying in or upon the dorsum of the whole length of the tongue.

REACTIONS.

There could, perhaps, be no more direct and easily demonstrated evidence of the pathogenicity of the exudate which is found in and upon the tongue and of its capability of exciting toxic systemic disturbances, than the reactions which very commonly occur almost immediately after the performance of lingual curettage. While such reactions have been most pronounced after the removal of large amounts of detritus from the tongues of subjects, whose cultures showed the presence of great numbers of the most virulent forms of microorganisms, they also have occurred, at times with most unpleasant emphasis, in subjects whole cultures grew only a few of the weaker forms of pathogenic bacteria.

The character of the reaction which usually occurs in subjects suffering from myositis is an increase of pain for a few hours, or even days, which is usually confined to or is most pronounced in or about the seat of the disturbance for which relief is sought. The pain of reaction may, however, extend into other parts or even occur in various other localities. In arthritic subjects the commonest form of reaction has been a general sense of discomfort and uneasiness for a day or two or an increase of pain in the affected part. In the subjects of gastrointestinal disorders the reaction has most often taken the form of nausea, or even vomiting, but occasionally there has

been a brief attack of diarrhea with cramps. In subjects without symptoms, who had submitted to the treatment to assist in the scientific test, myositic pains occasionally occurred after the removal of the coating of the tongue only, but in the large majority of every kind of cases, even after the removal of great quantities of necrotic material from the whole of the tongue at one time, reactions either have not occurred at all or have taken the form of slight malaise in the night and on the day following a seance of curettage.

While it may not be possible to prevent entirely the occurrence of reactions after curettage, they, nevertheless, can be ameliorated or avoided by taking pains to prevent injury to the epithelial layer through guidance of the movements of the plane in the mirror, or, by removing a smaller quantity of detritus, especially in the early seances, or, by making the interval between the seances at least a week, or even ten days, or by all of those measures combined. The testimony of a number of intelligent and observant individuals in whom severe reactions had occurred was to the effect that the severity of the symptoms of their reactions progressively declined, and in some cases disappeared, during the course of the treatment.

DECLINE OF VIRULENCE OF MICROORGANISMS.

This opens the way to record an expression of belief born of a long experience with curettage of all of the lymphoid structures of the pharynx, excepting the pharyngeal tonsil, that the original necrotic tissue which may have occupied the trapped surface of the oral dorsum of the tongue or which has been sheltered within the crypts, pockets and creases of the lymphoid apron for a long period of time, is empowered with greater virulence than that which is reproduced after the removal of such original material. Necrotic tissue will invariably be reproduced if the entrapping filiform extensions of the papillæ on the dorsum and the crypts and creases of the apron remain intact, but, apparently, for a time at least, though from other sources we have known it to be for years, its infective power is weakened or abolished, or the body is immune to it.

Since we have been made aware of the potentialities lurking in the contents of the tonsillar branches and the lymphoid apron, as well as in the layer of pathogenic exudate lying upon the top of the tongue, we have had numerous opportunities to try out the effects of curettage of all those structures in adult subjects from whom the faucial tonsils had been removed, and the often marked improvement in or abolition of persisting symptoms secured in that way have clearly shown that to relieve human suffering produced by infection from the throat, we must be prepared to deal with a much larger field than that comprised within the faucial tonsils only.

INFECTIONS.

The diseased tongue seems mainly to be an expansion of the oral and pharyngeal fields which act as sources of systemic infection, and while our experiences have shown very plainly and positively that it holds an especially intimate causal relationship with disorders of the digestive tract, we have been able, in addition, to demonstrate clearly it to be a contributive factor in, or the sole reason for the occurrence of, myositis, rheumatism, arthritis, vasomotor rhinitis, inflammatory new growths, reflex cough, enlarged thyroid glands, pendulous folds under the chin, some of the simpler skin diseases, low and high blood pressure and arrhythmia.

An instructive demonstration of the effects of the removal of the necrotic contents of the lingual apron and the layer of coating of the tongue upon chronic rheumatism, was given in the case of a physician who had suffered for eighteen months with severely painful and crippling rheumatism of the back. Every known means of relief had been contributed by many of his confrères without success before he was referred by an orthopedic surgeon for curettage of the tongue. The pain began to yield after the eighth or ninth seance, each one of the curettage procedures having been followed by progressively decreasing reactions of pain in the affected region, and now the patient, who is desirous of having this report published, says that he is only rarely reminded that he has a back. The predominating organism in this case was the Staphylococcus aureus in large numbers.

The list of disorders given above must serve only as a suggestive pointer, for we have been too much occupied in an effort to determine the infectivity of the necrotic tissue taken from diseased tongues to attempt to apply the test to the relief of any other maladies than those which fell incidentally under our observation and care during the course of this investigation.

During the period in which the relation of this field to various systemic conditions was being tried out, practically every patient whose lymphoid apron had been largely cleared of its diseased contents and whose tongue coating had been repeatedly shaved off, expressed their consciousness of a refreshment in their general health; that their appetite was better; that there had been an increase in weight, if before the treatment it had been below normal, or that they had more vigor and endurance and could accomplish more than usual—and their appearance bore testimony to the truth of their assertions.

Evidences of immediate improvement rarely follow curettage of the apron and the white coating of the tongue. It seems to be necessary in almost every case to remove by repeated scrapings of the entire tongue most of the original exudate before improvements begin to be recognized. If then the results are not shown in any special way, they are quite certain to appear in the form of improvements in general health. And our belief is that such improvements in health are almost always and almost entirely due to improvements in the digestive function. Indeed, so much of impressive evidence has been presented of pronounced amelioration in or complete disappearance of various and often distressing symptoms of chronic indigestion during or after the course of treatment by curettage, that there is now no room left for doubt that a very intimate causal relationship through infection exists between the diseased tongue and the gastrointestinal tract. In other words, this area apparently holds the key to many of the still unsolved mysteries concealed within chronic disorders of the alimentary canal.

In commenting upon the association of gastrointestinal disturbances with lingual tonsil hyper-

trophy, Wright and Smith (2) record a keen observation which in the light of recent revelations seems singularly like a prophecy. They write: "Chronic dyspepsia of the nervous type is observed in a considerable number of patients. Constipation is another condition which is apt to be associated with lingual hypertrophy. Whether the close relationship in anatomy and function with the gastro-intestinal tract has any influence in the association of acid dyspepsia and constipation and lingual tonsil symptoms we do not presume to say, but we call attention to the suggestiveness of the coincidence."

That the necrotic tissue in and on the tongue is at times the sole cause of chronic constipation by infection, has been conclusively demonstrated in a number of cases during this investigation. The following is a graphic illustrative case:

CASE.—M. C., female, aged twenty-four, whose tonsils were well enucleated five years ago, had suffered severely and continuously from constipation since she was twelve years of age. No apparent result followed six or eight seances of curettage of the lingual apron except a rather sharp reaction in the form of diarrhea, but almost immediately after the surface of the dorsum of the tongue in front of the apron had been included in the curettage procedure, three months ago, the bowels began to move without artificial assistance. After two or three subsequent shavings of the white coating of the tongue, the movements, for the first time in half the years of her life, became quite normal, and daily natural evacuations have continued up to the time of this writing. Meanwhile her appetite has quickened and twenty-two pounds have been added to her weight. Incidentally it may be of interest to note that what curettage of the diseased tissues of the tongue has done for this patient's constipation it also has done for her long standing extreme dysmenorrhea.

This story, in almost its exact language, could be told of another case in which, however, our efforts were aimed solely at the relief of an infection of quite a different nature.

We are fully aware that the observations recorded in this report represent only a very few of the facts which ultimately will be revealed in this practically untilled field of almost limitless possibilities, but, nevertheless, the amount of evidence thus far accumulated seems to be sufficient to offer an ever brightening promise that while the elimination of the exudates from the almost universally infected tongue may extend the length of the lease of life, it will also, quite certainly, insure that which is far more to be desired—an increase in the reserves of health.

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150 JORALEMON STREET.

Auricular Fibrillation

By FREDERICK W. PRICE, M. D., F. R. S. (Edin.),

London,

Physician to the National Hospital for Diseases of the Heart; Senior Physician to the Royal Northern Hospital, London.

INTRODUCTORY.

It is generally recognized that within recent years there has been a great advance in our knowledge of cardiac disorders. By means of the clinical polygraph and of the electrocardiograph we are able to obtain records of the movements of both the auricles and ventricles, and also to make out the time relations of the contractions of these chambers: unlike the sphygmograph, which affords information regarding the movements of the left ventricle alone. Among the discoveries resulting from the employment of graphic methods in the study of heart disease probably the most important is that of auricular fibrillation; indeed, it is not too much to say that it is one of the greatest regarding the functional pathology of the heart which has ever been made. It is of the utmost practical importance that the condition should be recognized with regard to the diagnosis, prognosis, and treatment of cardiac affections. Auricular fibrillation is a specific clinical condition, which can be recognized with certainty. It is characterized, in the large majority of cases, by complete irregularity of the arterial pulse, and also by absence of all signs of the normal contraction of the auricles. It accounts for approximately fifty per cent. of all cases of persistent irregularity of the heart, and it is found in from sixty to seventy per cent. of all cases of serious cardiac failure with dropsy. Mackenzie first described the condition as nodal rhythm,[1] and the irregularity peculiar to the condition has been known variously as pulsus arhythmicus, pulsus irregularis, pulsus irregularis perpetuus, and the mitral pulse.

NATURE OF AURICULAR FIBRILLATION.

By auricular fibrillation is meant a condition in which coordinate contraction in the auricle is replaced by incoordinate contraction; the individual fibers, instead of contracting in an orderly and simultaneous manner, do so rapidly and independently of each other, with the result that systole of the chamber as a whole never takes place. When auricular fibrillation has once set in, in the great majority of cases it persists for the remainder of life. But, instead of this, it may appear for a few hours only, and never return, or it may occur at infrequent intervals for weeks or months, and then cease. Many cases of paroxysmal tachycardia are due to paroxysms of auricular fibrillation, and may last for a few seconds or may continue for months.

[1] In what is termed nodal rhythm, the stimulus for contraction arises in some part of the auriculoventricular junctional tissues, giving rise to simultaneous contraction of both auricle and ventricle.

The tendency to occurrence increases, however, until finally the condition usually becomes permanent.

EFFECT OF AURICULAR FIBRILLATION ON THE HEART.

The effect of auricular fibrillation on the heart's action is usually pronounced. Instead of the ventricle receiving stimuli from the auricle at regular intervals, it receives them at completely irregular intervals. Further, the impulses which escape are numerous, and, if the conducting tissues are able to transmit them, the ventricular rate rises. Thus, an irregular, and, in the large majority of cases, a much too frequent pulse is produced. Such a change in the action of the ventricle, as a rule, produces a decided effect on the heart's efficiency.

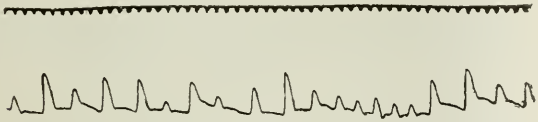

FIG. 1.—Tracing of the radial pulse, from a case of auricular fibrillation, showing complete irregularity of the pulse.

FIG. 2. Simultaneous tracings of the jugular and radial pulses, from a case of auricular fibrillation not under the influence of digitalis, showing coupled beats.

ETIOLOGY.

The majority of cases of auricular fibrillation falls within two groups: 1, those with a history of rheumatism, and, 2, patients suffering from myocardial degeneration. In the case of the former, the condition occurs more commonly in early adult life, and the patients frequently have valvular disease —more often mitral than aortic disease, and more especially mitral stenosis. In the second group of cases, the condition is more common after middle age. Auricular fibrillation has also been found occasionally in pneumonia, diphtheria, infective endocarditis, and the terminal stages of various exhausting diseases. Full doses of digitalis may produce it in predisposed cases, but only rarely. It is occasionally noted in aged people who exhibit no other symptoms or signs referable to the heart, so long as the pulse rate does not exceed the normal for their age. Its onset can now and again be traced to bodily effort, especially in the middleaged or elderly.

SYMPTOMS.

Patients with auricular fibrillation frequently complain of fluttering in the precordium, or of irregular action of the heart, or of both, possibly only on exertion. Apart from this consciousness of the heart's action, there is occasionally an absence of subjective symptoms. But, when the ventricular rate is much above the normal, symptoms as a rule are present, and these are the same as those of cardiac failure from other causes, such as shortness of breath, a sense of exhaustion, cyanosis, and dropsy. It would appear, however, that patients suffering from auricular fibrillation rarely suffer from definite attacks of angina pectoris. When the pulse rate is very slow, the Adams-Stokes syndrome may be present.

The degree of cardiac failure which arises as a result of auricular fibrillation may be slight or very severe. It depends upon, a, the rate of the ventricular action and, b, the degree of inherent muscle defect. As a rule, the onset of symptoms is gradual, but may ensue rapidly and the patient becomes very ill within a few hours. Similarly, the cessation of auricular fibrillation may be accompanied by an equally rapid improvement in the patient's condition.

The character of the pulse is very important. There is a wide variation in the ventricular rate, according as the pathway for impulses to the ventricle is free or interfered with, ranging from 40 to 140 or even 180 a minute, the average rate being between 90 and 140. The rate of the radial pulse does not necessarily represent the ventricular rate, for many beats of the heart may not be transmitted to the wrist, especially when the ventricle is beating rapidly; the ventricular rate, therefore, should be counted at the apex, either by palpation or preferably by auscultation. The pulse in auricular fibrillation is irregular, the irregularity in the majority of cases being continuous and persisting for the rest of the patient's life, in this respect differing from other types of cardiac irregularity. A feature of even greater importance is the fact that the irregularity is complete. In a sphygmogram it will be found that two beats of the same length or character

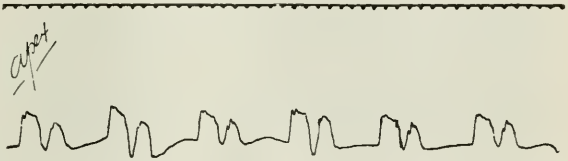

FIG. 3.—Tracing of the apex beat, from a case of auricular fibrillation, fully under the influence of digitalis, showing coupled beats.

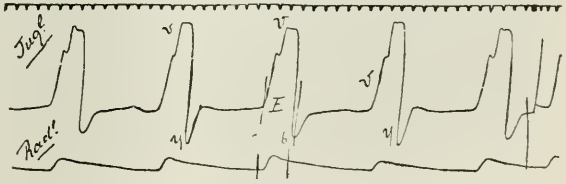

FIG. 4.—Simultaneous tracings of the jugular and radial pulses, from a case of auricular fibrillation, showing the ventricular form of venous pulse, and an unusually slow radial pulse.

rarely follow each other. There is often no relation between the length of a pause and the strength of the beat which follows it—i. e.: a short pause may be followed by a strong beat, and a long pause by a weak beat (Fig. 1). The beats may be coupled for long or short periods, and this may occur independently of the action of digitalis (Fig. 2), although it is usually due to it (Fig. 3). When the ventricular rate is slow (Fig. 4), or very rapid, the irregularity may be only slight, and we may have to adopt careful measurements of the sphygmogram to detect it.

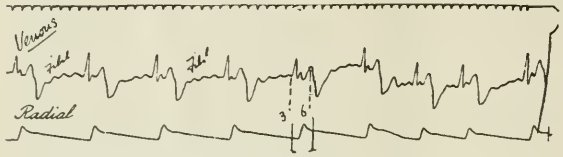

Fig. 5.—Simultaneous tracings of the jugular and radial pulses, from a case of auricular fibrillation, showing multiple undulations (marked Fibl.) in the plebogram, caused by the fibrillating auricle.

In cases of mitral stenosis in which a presystolic bruit, due to auricular systole, is present, this disappears with the onset of auricular fibrillation; whilst a diastolic bruit, if present, persists. The jugular veins may be so distended that there is no visible pulsation in them. When pulsation is visible, however, it is of the positive type, only one wave being visible, this occurring during ventricular systole. In a tracing of the jugular vein, there is an absence of the normal a wave; in other words, there is the ventricular form of venous pulse (Fig. 4). The normal a wave, being due to the contraction of the auricle, cannot be present, because the auricle does not contract. On the other hand, in cases in which there is infrequent cardiac action, multiple undulations, caused by the fibrillating auricle, may be present during diastole (Fig. 5). There is also an absence of the normal a wave in the cardiogram (Fig. 6), and in a tracing of the liver pulse (Fig. 7).

The electrocardiogram is characteristic (Fig. 8). The ventricular complexes are separated by irregularly irregular intervals; intervals of the same length rarely follow one another, and the pauses show no relationship to each other. The amplitude of the R deflections also varies from cycle to cycle. Further, there is often no relationship between the length of a pause and the amplitude of the R deflection which follows it, i. e., a short pause may be followed by an R deflection of large amplitude, and a long pause by one of small amplitude. When the ventricular rate is slow, the irregularity may be only very slight, and the amplitude of the R deflections is almost constant. As the ventricle receives stimuli from the auricle through the normal channel, the ventricular deflections are of normal form; T, however, may show inversion.

There is an absence of P deflections; these cannot be present, because the auricle does not contract. There are, on the other hand, oscillations, caused by the fibrillating auricle, occurring at the rate of from 400 to 600 a minute, and irregular in time and form, during diastole. These are most evident in cases of slow cardiac action, whereas in frequent cardiac action it is often difficult to make them out. Their size varies, being sometimes very minute and sometimes of considerable size. They may coincide with the T deflections, in which case the outline of the latter is altered.

DIAGNOSIS.

Auricular fibrillation can be diagnosed with absolute certainty when complete irregularity of the arterial pulse, the ventricular form of venous pulse, and multiple undulations in the jugular pulse are present, together with an absence of all signs of an auricular wave in a tracing of the apex beat and of the liver pulse, or on electrocardiographic examination. We may be sure, too, that auricular fibrillation is present, when there is complete irregularity of the pulse in conjunction with the ventricular form of venous pulse; indeed, we may be reasonably certain of its existence from the mere presence of complete irregularity of the pulse.

With regard to polygraphic tracings, it is necessary to point out that the h or b wave is occasionally seen in cases of auricular fibrillation, more especially in relatively slow acting hearts, and may exhibit some resemblance to an a wave. A differential diagnosis is possible; for the h or b wave may be distinguished from an a wave by the constancy of its relation to the preceding systole, while the distance which separates it from the c or v wave of the following systole will be found to vary in different cardiac cycles.

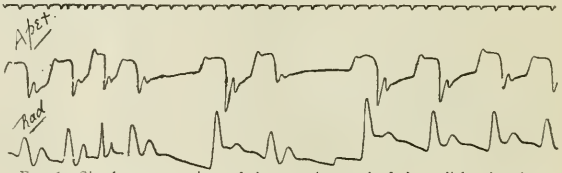

Fig. 6.—Simultaneous tracings of the apex beat and of the radial pulse, from a case of auricular fibrillation, showing absence of the normal a wave in the cardiogram.

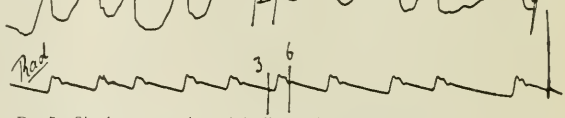

Fig. 7.—Simultaneous tracings of the liver and radial pulses, from a case of auricular fibrillation, showing absence of the normal a wave in the former.

With regard to electrocardiographic curves, it should be borne in mind that oscillations resulting from tremor of the somatic muscles may somewhat resemble those due to auricular fibrillation. The

former, however, may readily be distinguished by the fact that they are of more frequent occurrence—being at the rate of about 50 per second, they occur at regular intervals, the deflection P or some indication of it may be noted, and the ventricular complexes do not occur at irregularly irregular intervals.

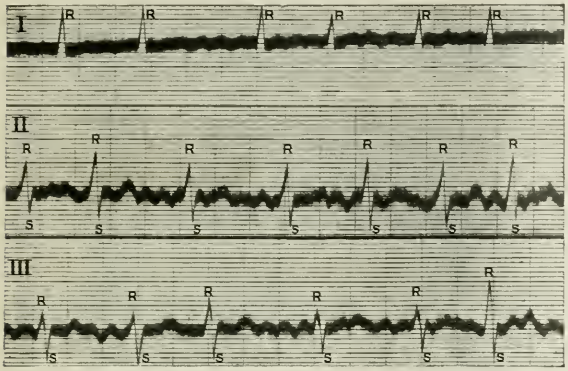

Fig. 8.—Electrocardiogram from a case of auricular fibrillation.

It is further necessary to distinguish the electrocardiograms of auricular flutter from those of auricular fibrillation. In the case of the latter, however, the R deflections occur at irregularly irregular intervals; the amplitude of the R. deflection varies from cycle to cycle, and there is often no relation between the length of a pause and the amplitude of the deflection R which follows it, i. e., a short pause may be followed by an R deflection of large amplitude, and a long pause by one of small amplitude. In the case of auricular flutter (Fig. 9), it will be found that these features are not present, even though the ventricular rhythm is markedly irregular. Further, the deflections due to auricular systole in cases of auricular flutter may be distinguished from the waves that are found in auricular fibrillation. In the case of the former, they are less frequent, ranging between 180 and 380 a minute, rhythmic, and of constant form in each lead; whereas, in auricular fibrillation the deflections are more numerous, ranging between 380 and 500 a minute, irregular in rhythm, inconstant in form in each lead, and smaller in size.

PROGNOSIS.

Auricular fibrillation is, in the great majority of cases, indicative of some myocardial disease. Furthermore, the rapidity and irregularity of the heart's action, which are usually associated with the condition, necessarily embarrass the functional efficiency of the organ. Put briefly, the prognosis of auricular fibrillation depends upon the capacity of the heart to carry on its work under the new rate and rhythm, and this in turn depends upon the integrity of the cardiac muscle. If this is relatively good, there may be for years little or no indication of cardiac failure. In the great majority of cases, however, this is not the case, and so heart failure results. This is especially the case when the pulse rate is rapid and the heart is dilated. The rate of the pulse is of great prognostic importance, a persistent rate of 120 or over usually being of serious omen.

Occasionally, with the inception of auricular fibrillation grave cardiac failure may supervene with surprising rapidity, and death may follow within a few weeks, or even days. In endeavoring to form a prognosis, a point of the utmost importance is to ascertain how the heart responds to treatment. Cases of auricular fibrillation form a group quite by themselves in the way in which they respond to digitalis or one of its allies; the majority respond in a striking manner and sometimes the drug is almost a specific, more especially in the rheumatic group. Another point of the utmost importance in weighing the prognosis is to ascertain how far the patient is able to modify his life, so as to bring it within the limits of the heart's strength.

As has been pointed out, attacks of auricular fibrillation usually have a tendency to become more frequent, until ultimately the condition becomes permanent.

TREATMENT.

This is of the greatest importance. Whether there is mitral disease, aortic disease, or disease of the myocardium, if the ventricular rate is rapid, digitalis or one of its allies should be administered, the results, in the majority of cases, being very good and, in some cases, being extraordinarily good; there is a rapid fall in the pulse rate (Fig. 10), and a concomitant improvement in the general symptoms. Two exceptions are: 1, some cases of wellmarked myocardial degeneration, and, 2, cases in which there is accompanying pyrexia. In the latter, appar-
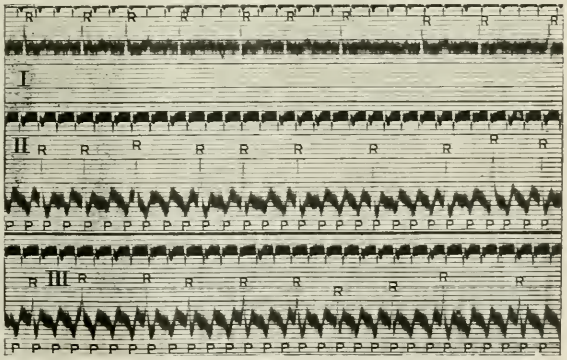
Fig. 9.—Electrocardiogram from a case of auricular flutter. The auriculoventricular rate is sometimes 2: 1, at others 3: 1, and at others again 4: 1. The response of the ventricle to auricular contraction being at irregular intervals, there is irregularity of the ventricular rhythm.

ently the response to digitalis, if present at all, is, as a rule, very slight.

With regard to dosage, my custom is to begin with a dram of the tincture a day, or in urgent cases even one and one half or two drams a day, and to continue until there is nausea or vomiting, diarrhea, headache, an unduly slow pulse, or what is called coupling of the beats. The drug should then be stopped until these symptoms have passed away, which is generally in a few days. In the great majority of cases the patient relapses, and the indication then is to find out what dose suits him best; that is, the dose sufficient to control the action of the heart, without at the same time giving rise to any toxic symptoms; this may require weeks or even months of careful observation. I generally begin with half the original dose, and this can be increased or diminished according as the rate of the heart increases or diminishes. In this connection, help may frequently be obtained from the patient himself, who is often able to say what dose suits him best; in other words, the patient's own sensations are often a good guide, and should be taken into account, as well as the pulse rate. The dose necessary in individual cases may exhibit a wide variation; it may be as small as a dram of the tincture a week, or as large as forty-five minims or even more a day. Having discovered this dose, it will be necessary, in the great majority of cases, for the patient to continue the drug for the remainder of his life. In the course of time, variations in the dose may be found to become necessary. The cumulative action of the digitalis is apparently not nearly so important as has been believed; at the same time, the pulse ought to be watched. Coupling of the beats is a danger signal, and we should either stop the drug for a few days or diminish the dose.

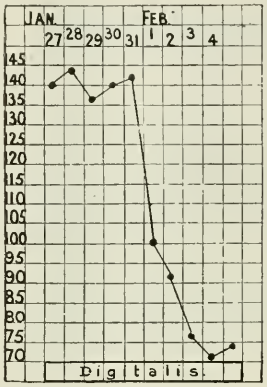

Fig. 10.—Chart showing typical result on the cardiac rate of the administration of digitalis in a case of auricular fibrillation with tachycardia. A dram of the tincture per diem was commenced on January 27th.

Intravenous injections of strophanthin may be used in urgent cases of cardiac failure, when it may be advisable to obtain a more speedy result than is possible by the administration of one of the digitalis series of the drugs by mouth. I myself employ one dose of one hundredth of a grain, or two or three doses of one two hundred and fiftieth of a grain every two hours. This may be followed by the administration of tincture of digitalis by the mouth, when advisable.

When auricular fibrillation is not accompanied by a rapid pulse, no decided result usually follows the administration of digitalis; indeed, it is often difficult to be certain how far the improvement may be due to the rest in bed and other measures adopted, apart from the effect of the drug.

Recently, quinidine sulphate, administered by the mouth, has been tried, with the object of arresting the condition. One hundred and thirty-five cases have so far been published, and in seventy-five, that is in fifty-five per cent. of these, the normal rhythm has been restored. The drug seems to be a valuable addition to the treatment of this condition, but it should be employed with caution, and perhaps a preliminary course with a small dose for a day or two is advisable. There appears to be a real danger of embolism.

Influenzal Sinusitis*

By HARMON SMITH, M. D., F. A. C. S.,
New York.

The selection of this title is based upon the experience incident to the recent epidemic of influenza. While the etiology of infective sinusitis is not confined to influenza, one may accurately affirm that the largest proportion of cases is a sequence to or a complication of this infection.

The teeth play a minor part in the infection of the sinuses and then only of the antra. The manifold types of infection following the common cold produce a corresponding involvement of the accessory sinuses, varying from a catarrhal sinusitis to a well established empyema. But in all cases of pronounced influenza there is every reason to anticipate a complication of the accessory sinuses or of the middle ear.

In my own experience in the recent epidemic, or pseudoepidemic of influenza, the well to do classes have been unusually afflicted with complications of sinusitis, otitis media, and pneumonia. The influenza bacillus gains access to the accessory sinuses either by continuity or by having the microorganism forced into the sinus by violent fits of coughing or blowing the nose. The invasion seldom occurs in the first stages of the disease, but apparently follows the abatement of the acute manifestations and impresses upon the patient the picture of a relapse. The temperature from the influenza has often become normal or nearly normal. The aches and pains have disappeared. The appetite has returned and, barring the weakness due to physical exertion, the patient is inclined to and often does resume the ordinary pursuits of life. Without undue exposure or de-

*Read before the Queens County Medical Society, March 28, 1922.

parture from ordinary habits he suddenly feels chilly, the head feels full, the eyes ache, the brain relaxes, the body becomes lethargic, and all the symptoms of an acute head cold suddenly appear. In twelve to twenty-four hours there is a dull pain over the frontal region or over the antrum, mastication is painful, and the head aches particularly when the patient bends forward. Local tenderness is experienced at the inner canthus of the eyes, or supraorbitally. There is a rise of temperature and if the sphenoids are involved there is occipital pain—the eyeballs hurt and there is a dull pain behind the eyes upon pressure. At this period the patient is generally referred to the specialist, who upon examining the patient is able to determine the side involved, the sinus involved and the methods best adapted to eliminate the difficulty.

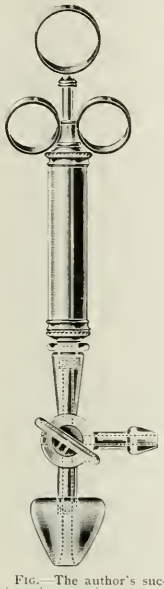

FIG.—The author's suction sinus syringe.

DIAGNOSIS.

The diagnosis is based upon: 1, Localized pain; 2, geographical appearance of pus in the nose; 3, transillumination, and, 4, x ray interpretation. When the maxillary sinus is involved painful sensations are experienced by the patient upon mastication and a general sensation of fullness and discomfort is felt upon the side involved. The voice is nonresonant and has a dead solid sound which on speaking is imparted to the ear of the involved side. The examiner elicits pain upon pressure over the canine fossa externally; by tapping the teeth with a tongue depressor and finally by placing the thumb in the mouth and the index finger externally over the antrum bring the two together with force. The presence of pus in the middle meatus and covering the inferior turbinate, whether there by natural drainage or after shrinking with cocaine and adrenalin, or after suction or from gravity drainage induced by holding the head bent well forward between the knees, demonstrates the involvement of either the maxillary or the frontal sinus, or the anterior ethmoidal cells. The determination of which one of these accessory sinuses is concerned is ascertained by elimination.

The next step immediately at hand is transillumination. This is accomplished by means of one of the transilluminators now employed by the specialists, and its application is not confined to office employment, but may, by means of the rheostat, be employed in any house supplied with electricity. Transillumination is by no means infallible, but in conjunction with other diagnostic measures furnishes another link in the chain of evidence. The positive findings show a marked reduction of light on the involved side. If both sides are involved equally it lessens the accuracy of diagnosis. The errors of transillumination are due to the presence of a dental plate; to an exaggerated thickness or thinness of bone, to previous involvement of the sinus leaving a thickened membrane, or to scar tissue over the sinus externally, due possibly to abscess or to the removal of carious bone.

The last and final element of diagnosis is the x ray. This, too, is circumscribed in its efficiency by the technic of the röntgenologist, by thickened membrane, density of bone, or the presence of a mucocele, which thins the walls of the sinus.

What has been said of the maxillary sinus may as well be applied to the frontal. Here pain is elicited by tapping over the supraorbital region and pressing upwards under the supraorbital ridge. Transillumination is even less definite than when applied to the antrum, for the angle of approach determines, in a large measure, the degree of illumination. The light should be only of such density as to illumine the distal phalanx of the index finger, and from this as a comparison the relative transillumination of the frontal sinus is determined. In many instances the heavy overhang of the supraorbital arch is of such character that light of the specified intensity will not penetrate, and it is only by increasing this intensity and by relative comparison with the opposite side that any deduction is possible. The same elements of error obtain with the x ray, and here scar tissue, such as may result from the cutting of the supraorbital nerve for neuralgia, will stultify the x ray findings. Pain on pressure over the frontal sinus likewise is complicated by involvement of the supraorbital nerve. The ethmoids may evidence involvement by pain experienced from pressure without inwards at the inner canthus of the eye. But subjective pain is often felt here without pressure even in catarrhal colds. Congestion within the nose from any of the forms of rhinitis will occasion pain here, associated with a tired feeling in the eyes. Transillumination and x ray are equally unreliable here, for there are few patients who have not had more or less ethmoiditis and will show evidence of the involvement in both transillumination and x ray. There is seldom a report coming from our röntgenologist which does not say "granulations or thickened membrane in the ethmoidal cells."

RÔLE PLAYED BY THE SPHENOID.

Now the sphenoid is possibly one of the most frequently involved of the sinuses, but being the most remote and the most difficult of diagnosis escapes observation. How many headaches, how many pains behind the eyes, how many cases of nasopharyngitis, and postnasal drippings are due to sphenoiditis, we scarcely realize. I am acquainted with a number of cases in my own and confrères' experiences where mental depression, lack of physical stamina, and loss of energy associated with ocular disturbances have been eradicated by elimination of sphenoidal sinusitis.

But at present we are only interested in the acute involvement of this sinus from influenza. Pain is evinced by the patient as existing behind the eye, and in the back of the head and neck. Transillumination is impossible. Pressure against the anterior wall of the sinus is negative, for there is

always pain when feeling in the nasopharynx. X ray may show something or nothing; pus may be seen in the socalled sphenoidal recess, or in the nasopharynx, which determines that there is involvement of the sphenoid or posterior ethmoids. The Holmes pharyngoscope may show pus exuding from the sphenoid, in which case the diagnosis is positive. Now we have determined the presence of pus in one or all of the sinuses and the question of treatment arises.

Personally I am opposed to immediate operative interference in acute cases either by puncturing the antrum, removing the middle turbinate, or breaking down the anterior wall of the sphenoid.

All cases of sinusitis are not amenable to treatment alone. There are many instances where measures other than surgical would be considered unjustifiable. However, the greater number of these unavoidable surgical cases result from the patient not recognizing the gravity of the condition in its inception and consulting a specialist, or from the inadequate treatment administered by the one consulted. A majority of acute uncomplicated sinus infections in time will get well of themselves. The greater number of fatalities in sinusitis, likewise, result from operative interference rather than from the untreated, unhampered progress of the disease. Etiology, likewise, plays a large part in the success of treatment. As for instance, a maxillary sinusitis due to a diseased tooth or a foreign body in the antrum would not yield to anything but surgery, likewise a chronic sinusitis of long duration with polypi filling the cavity, and with polypi of granulations blocking the exit of the sinus, treatment, other than surgical, would be unavailing and an unwarranted waste of time. There are a number of cases, however, which do not come under these two classes where treatment of the kind I shall presently describe will be not only effective, but will obviate the undesirability of operative measures.

METHOD.

My method of procedure has been divided into two classes: first, that applied by myself in the office; second, that followed by the patient at home.

I apply on pledgets of cotton a one per cent. solution of cocaine and a one to 8,000 solution of adrenalin to the ostia or exits of the sinuses involved, so that the turbinates and the tissue in the immediate locality of the exit is slightly cocainized and shrunken. A similar procedure is also followed on the opposite side to reduce the puffy membrane which will facilitate free irrigation. After ample space has been obtained in each side of the nose to justify irrigation, I use a Douglass douche with a hot alkaline solution to wash out the nasal cavities. For this purpose I have found nothing better than a powder I have called alkanos.

When an ounce is added to the pint of hot water, it makes an alkaline, nonirritating, slightly antiseptic solution. By having the patient flex the head and neck well on the chest and with the head turned slightly to the well side, the solution is introduced by means of the Douglass douche and carried through the well side, behind the septum, and out through the involved side. If no force is employed other than is just necessary to carry a large volume of water through the nostrils and if the nostrils are open and the head well flexed, there is no danger to the eustachian tubes. Several of these douchings are performed before I employ suction. I sometimes use suction at the same time that douching is employed by means of the Loré suction tip—which is a modification of the two way ear irrigator. If I do not use this method, I take an ordinary suction bottle and only employ light suction in these acute cases—up to six or eight on the dial. I again wash from the nose the pus sucked from the sinuses and finally apply the suction syringe to introduce into the sinuses such medicated solutions as I consider to be applicable to the case. In the present epidemic I have almost entirely confined my use to collene, which is a nonirritating, noncorrosive colloidal silver solution in suspension, having the virtues of silver nitrate without its irritating sequence and more effective than argyrol with its disagreeable discolorations. The Smith's sinus syringe consists of an all metal syringe with a nasal tip fitted with a two way cock. It is first loaded with the medication, as any syringe is filled, with the thumb piece turned in the long axis of the syringe. After loading, the thumb piece is turned towards the suction tube which is attached to the fitting on the nose piece and to the suction apparatus of the pump. Only five to eight degrees of suction are employed, which is tested before placing the tip in the nose.

The patient is asked to close the opposite nostril from the one occupied by the nasal tip and is instructed to swallow or say "kah-kah-kah" and when the vacuum is obtained and the dial registers the five or eight degrees of suction, the operator turns the cock in the direction of the syringe and the medication is forced into the nose and accessory sinuses of that side. As a liquid will follow a released vacuum and as pressure of the piston still further accelerates this tendency, the disengaged medicament is forced into the previously emptied, infected sinuses. In this manner I have been successful in overcoming the majority of acutely infected sinuses and a large proportion of chronically infected sinuses. I know the medication enters the sinuses for I have demonstrated this to my own and my colleagues' satisfaction by employing colored solutions, which were in evidence after sucking and washing on the following day. As the infected sinus is left filled with the medicated solution employed, there is reason to conclude that a long continued application of a healing medicament will result advantageously to the patient. After this treatment I either introduce postnasally or spray intranasally albolene with five grains each added of camphor and menthol to the ounce to allay the irritation.

The patient can materially aid the doctor in the elimination of these difficulties by keeping the ostia patent and drainage going in the interim. To facilitate this I give the patient a solution of adrenalin, one to 8000 in rose water to spray the nose with every four hours to be followed by burying the face in a bath towel wrung from extremely hot water, so that at first the patient only inhales the steam and is able to apply the towel to the face and forehead gradually. This is applied with the patient sitting with the head and body bent well forward to

aid by gravity the drainage of the sinuses. I also advice free catharsis, light diet and ample ingestion of water. I sometimes give some form of belladonna with powdered opium and aspirin to allay the pain, to shrink the mucosa and induce perspiration, all of which aid in elimination. Operative interference is only justified when there is agonizing pain, high temperature, failure in obtaining drainage and unsuccessful efforts in treatment.

SINUSITIS IN CHILDREN.

A great many children have sinusitis—more, in fact, than the ordinary observer would surmise. In the past year I have had a number of children referred to me by general practitioners with bronchial disturbances unaltered by the customary measures at their command. These cases have cleared up when the sinusitis disappeared. The pus drops into the trachea and bronchi during sleep and produces a cough which is more disturbing at night than in the day, and is associated with abundant expectoration. Again a number of cases of otitis media are due to sinusitis, in which the infection extends or is blown into the ear. Many of you will recall the experiences of your early boyhood or at least of your associates who had socalled colds each winter, lasting until summer, where many handkerchiefs were used and a thick, mucopurulent material, often bloodstained and of revolting nature, was in constant evidence, which were unquestionably subacute sinusitis cases. They also suffered from recurrent attacks of earache incident to the nasal stoppage and to the effort to blow the nose, thereby blowing pus into the ear. All of these would have been spared the earaches and the evils of diminished hearing if they had been treated by modern methods.

RESULTING FIBROSIS.

Whenever a sinus has once been invaded it is followed by an increased fibrosis in the lining membrane, just as any inflammation leaves its mark in an increased amount of fibrosis. So that recurrent sinusitis will ultimately result in thickening of the lining membrane of the cavity and both transillumination and the x ray will show the sinus to be apparently involved. This is why, as I have already remarked, the majority of cases referred to the radiographer returns with a report which says that the sinuses show either granulations or thickened membrane. Comparatively few reports ever come back from the radiographer declaring the sinuses to be normal. I, therefore, believe that an operator who relies too greatly upon the report of the radiographer for justification of his operative measures is making a grevious mistake.

I recently had a patient sent to me for operation upon the antrum presenting all the classical symptoms of maxillary sinusitis. The transillumination was positive, the pain on pressure positive, percussion on the teeth of the involved side positive, and there was some mucopus in the washings from the nose after shrinkage and irrigation. However, after careful elimination and examination I found an alveolar abscess at the root of a capped tooth, which extended up and over the anterior antral aspect and upon opening the abscess evacuated a quantity of pus and bloody serum, thus relieving the pain. This patient had been advised to have his antrum operated upon immediately.

SELECTION OF CASES.

Personally, I am loath to operate immediately upon either the acute or subacute sinus cases. Neither do I believe that the indiscriminate puncturing of the antrum is either necessary or warrantable. It is painful, is followed by a discomforting reaction and relieves the patient in no shorter period than the treatment already outlined. Operative measures by no means insure against subsequent reinfections, and I believe it so alters the mechanism of the parts as to induce rather than diminish reinfection.

In many patients presenting all the classical symptoms justifying operation, I have been enabled to cure them by this treatment, so that no further disturbance has arisen in a period of several years.

Every surgeon is prone to follow methods of his own selection and is unwilling to forsake them to employ something that is new and requires more time than that with which he is familiar; but if one is willing to familiarize himself with the technic of this treatment and to employ it conscientiously and persistently, a large part of the operative measures now employed can be avoided.

GENERAL CONSIDERATIONS.

The observations compiled in this paper refer to acute and subacute cases incident to influenza infection, and not to empyema induced by foreign bodies, carious teeth, and old chronic polypoid degenerative conditions, which will, of course, not yield other than to operative measures. Neither do I wish to include the acute infective type with excruciating pain, high temperature, and great constitutional depression.

I have quite recently had to perform an unavoidable operation upon both sphenoids in a young woman referred to me by Dr. Selfridge of San Francisco. The patient had influenza associated with follicular pharyngitis and lateral pharyngitis. Her temperature rose to 105° F. with delirium. I called in consultation a neurologist, to eliminate the possibility of meningeal disturbances. Her whole head, particularly the occiput and neck, gave her excruciating pain. Her pulse was irregular and thready and she would go into collapse at times. Her general practitioner suggested further consultation and Dr. Harlow Brooks did a complete physical examination and could find no cause for the continued increase in temperature or for the delirium. I suspected the sphenoids, but could gain no evidence of pus, and she was in no condition for an x ray. So I called in Dr. MacKenty, who agreed with me that the sphenoids were responsible.

I opened both sphenoids under cocaine, with the patient in bed, and evacuated the pus which relieved the delirium, though the elevation in the temperature remained for some time. I have since opened the sphenoids still further and obliterated the posterior ethmoid cells, which a subsequent x ray showed to be involved. The patient has virtually recovered. This is the most exaggerated case of acute infection I have seen and treatment could not be carried on without endangering the patient's life. Operation was imperative.

44 WEST FORTY-NINTH STREET.

Bronchoscopic Cases of Dental Origin*

By HENRY HALL FORBES, M.D., F.A.C.S.,
New York.

The removal of foreign bodies which have become lodged in the bronchi still forms a large part of our work and their successful removal requires skill and ingenuity. The five cases which form the basis of this short paper are all different as to the circumstances surrounding the introduction of the foreign body, the result in the individual patient, and the lesson which I was able to draw when the cases were completed. While the five cases are all noted as of dental origin, four were truly accidental as far as the dental surgeon was concerned; only in two cases was the surgeon alive to the fact that an accident had occurred. With this in mind it seems wise that emphasis should be given to this point and the possibilities of accidents he brought again to the notice of the operating surgical dentists. My own experience in watching the work, as I have had frequent opportunity, gives me the impression that these men have been alive to this part of their work, and in blocking off the pharynx with gauze sponges before extracting tends to prevent the inhalation of a foreign body, blood clots or infected material. The inhalation of the gold crown was due to the nonuse of a rubber dam when placing the crown in position.

In a recent article by Heoblom (1), of the Mayo Clinic, an analysis of fifty-two cases was made, which included one of mine reported here. He dwelt especially on the possibility of pulmonary suppuration and bronchiectases. A lung abscess occurred in one of my cases. A broad lesson can be drawn by us as well as by dental surgeons on the possibility of a foreign body or the aspiration of infected blood or other material as a cause of irritating cough, pneumonia or lung abscess following an operation about the nose or mouth. Especially may this be the case where a tooth is broken or a filling loosened by a mouth gag.

GOLD CROWN IN RIGHT MAIN BRONCHUS.

Case I.—The patient, a male, aged eighty-two, was referred to me on October 27, 1913. This was my first case of foreign body. The patient, while having a gold crown fitted to the right upper canine tooth, coughed; the crown was loosened and disappeared. As coughing was an immediate result, the dentist thought that the crown had in all probability been inhaled. An x ray was taken by Dr. Judson Quimby who found a foreign body present in the right main bronchus and referred the case to me. The patient was immediately taken to the New York Post-Graduate Hospital where, under local anesthesia within four hours from the time of the accident, I removed the tooth crown with a Bruning type of bronchoscope. It is interesting to note that the measurement from the upper teeth to object as projected on chest was twenty-eight cm. and that measurement when the tube was passed was practically the same, twenty-seven cm. The patient remained in the hospital overnight. There were no complications and he was discharged cured.

TOOTH PLATE IN LEFT PRIMARY BRONCHUS.

Case II.—The patient, a male, aged forty-seven years, was referred to me by Dr. John F. Erdmann on August 11, 1916, with the following history. The patient, a native of Athens, Greece, had some months before during the night swallowed the portion of a tooth plate. Efforts were made at extraction in his home city, also in Rome and Lisbon. X rays showed the foreign body in the left primary bronchus. Under cocaine anesthesia the broken plate was removed at the New York Post-Graduate Hospital on August 12, 1916. There were no complications and the patient was discharged cured.

LUNG ABSCESS FROM ROOT AND SMALL PIECES OF TOOTH INHALED.

Case III.—The patient, a female, aged thirty-nine years, was referred by Dr. John F. Erdmann on August 27, 1917. This case was reported by me at a section meeting of the New York Academy of Medicine, and was the most distressing of the series. The history was as follows: About sixteen months before, the patient, when in excellent health had had removed, under general anesthesia, a number of teeth. Within a few weeks (note absence of early symptoms) a constant cough developed, accompanied by a profuse purulent expectoration. She lost in all some sixty-eight pounds in weight. About five weeks before her visit to me she coughed up a piece of bone. Up to this time a diagnosis of purulent bronchitis had been made. No tubercle bacilli were found in the sputum. X ray pictures taken shortly after coughing up the foreign body showed an abscess cavity in the lower part of the left upper lobe, but no foreign body. An x ray at the Post-Graduate Hospital showed the same condition. Bronchoscopy was performed eleven times under local anesthesia. A No. 9 Jackson tube was used and a suction tube was passed to opening of abscess cavity and pus evacuated. This was followed by an injection of one dram of fifteen per cent. argyrol solution, again passing suction tube to remove excess, Dr. Lynah assisting. I did not avail myself of the double tube of Dr. Yankauer, which was not known to me at that time. The shortest time for a treatment was three and a half minutes by myself and seven and a half by my house surgeon; that is the actual time from use of the laryngoscope to removal of bronchoscope. There was, however, no need for haste after the second treatment. I might add that the patient was brought to the hospital on a stretcher, having been told that she had not a week to live unless something was done. The amount of fluid brought up at the time of admission was one pint in twenty-four hours.

The x rays in this case were interesting and instructive. The first picture failed to show the presence of a foreign body, and yet the root of a tooth

*Read at the fourth annual meeting of the American Bronchoscopic Society, June 1, 1921.

was coughed up after this by the patient. The x ray showed beautifully the abscess cavity and the level of the fluid. However, later x rays taken showed the fragments which were subsequently coughed up. Patient was well at last report.

AMALGAM FILLING.

CASE IV.—Female, aged forty-two, of Bangor, Me., was referred to me by her family physician. In this case there was also a history of the extraction of a number of teeth under general anesthesia some two months before, sixteen in all. Following the operation she began to cough and have asthmatic attacks. The x ray showed the presence of a foreign body in the left primary bronchus. This was removed under cocaine anesthesia on July 20, 1920, at the New York Post-Graduate Hospital. There was no reaction and the patient was discharged.

AMALGAM FILLING—LEFT LOWER LOBE OF BRONCHUS.

CASE V.—The patient, a male, aged thirty-five, was referred to me by Dr. Judson Quimby, to whom the patient had been referred for an x ray. The history briefly was that on the day previous under gas anesthesia a number of teeth had been extracted. The dental surgeon, an excellent operator, failed to account for a small filling at the time of the operation. As the man on his return the next day seemed to have some slight irritation in the chest and a cough an x ray was taken, which showed a small foreign body low down in the left lung. That evening under cocaine anesthesia a hunt was made for the foreign body, but without success.

I kept him at the hospital for a week during which time he was seen by Dr. Imperatori and Dr. Lynah, who agreed that a second attempt should be made at extraction. The x ray showed the body still in same position. Using a long five mm. tube I again made a search for the foreign body, but with no success. Following both examinations the parts were sprayed with twenty-five per cent. argyrol solution. Following the second bronchoscopy there was a marked reaction and it was thought a small area of pneumonia was found. While great care was exercised over the sputum our third and last x ray (repeated) showed that the foreign body had disappeared. The patient was discharged, cured.

CONCLUSIONS.

1. Bronchoscopy early or late in all doubtful cases of possible foreign body inhalation following dental work under general anesthesia is indicated for diagnostic purposes.

2. While cough, dyspnea, asthmatic wheeze, and pain in chest may be present as symptoms at once, they may be absent, and the foreign body be expelled or found by x ray.

3. Endoscopic treatment is indicated when abscess or bronchiectasis is present.

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Four Cases of Open Safety Pin in the Esophagus of Children Under Eleven Months of Age*

By ELLEN J. PATTERSON, M.D., F.A.C.S.,
Pittsburgh.

The problem of the nursing child with an open safety pin in the esophagus presents some difficulties peculiar to itself which are not encountered in the older child and the adult. It is essential that the pin be removed speedily without traumatism and without interruption of the feeding. If the pin should pass into the stomach or intestinal tract, the character of the diet is such that it does not assist the passage of the pin and cathartics are contraindicated.

The small size of the esophagus, leaving so little room for version or other manipulation, the possibility of encountering an enlarged thymus compressing both esophagus and trachea, and the great variability in the size of the esophagus in nursing infants add difficulty to esophagoscopy. Thymic compression of the trachea is relatively frequent in children and it is a particularly dangerous factor in esophagoscopy because of the increase in the stenosis caused by the rigid esophagoscope posteriorly, furnishing a firm resistance against which the hypertrophied thymus may press the trachea.

CASE I.—E. A., female, a normal, nursing infant, seven months of age, was admitted to the Presbyterian Hospital on June 22, 1918, with a history of having swallowed an open safety pin fifty-six hours before admission, without subsequent symptoms of any kind. The report of the röntgenologist, Dr. G. W. Grier, showed an open safety pin in the pylorus. The pin passed forty-eight hours later without difficulty and without having produced any symptoms during its five days sojourn in the alimentary tract.

CASE II.—F. A., male, a normal, nursing infant, ten months of age, was referred by Dr. O. M. Shreve, of Erie, Pa., with a history of having swallowed an open safety pin twenty-four hours before admission. The röntgenogram taken by Dr. G. W. Grier showed the pin open, point down, at the sternal notch. The small size of the presenting ring rendered it difficult to find the pin and it required three minutes and thirteen seconds to find and remove the foreign body. The child was given no anesthetic, there was no reaction, and no interruption of feeding.

CASE III.—M. H., female, a normal, nursing infant, seven and one half months of age, was admitted to the Presbyterian Hospital, June 2, 1919, with a history of having swallowed an open safety pin five

*Read at the fourth annual meeting of the American Bronchoscopic Society, June 1, 1921.

days previously. The child had been unable to nurse after swallowing the pin, but could take a little water. Two unsuccessful esophagoscopic attempts had been made to remove the pin the same day, before the child was referred to me. Upon admission she was restless, fretful, unable to nurse, temperature 101° and in need of fluids. The radiograph showed the pin open point up at the sternal notch with the point buried in the soft tissues.

As a rule I would not repeat esophagoscopy within twenty-four hours, but this child seemed too near the borderline of water starvation to permit of delay. I introduced the esophagoscope and removed the pin through the mouth without anesthesia, general or local, in one minute, twenty seconds. Three hours later the baby was nursing and was discharged well the next morning.

Case IV.—G. M., female, a normal, nursing infant, twelve months of age, referred by Dr. Sol Hartzell, of Youngstown, Ohio, October 2, 1919, with a history of having swallowed an open safety pin five hours previously. The child could nurse and had no symptoms of any disturbance. A radiograph, taken four hours previously, showed the pin lodged in the esophagus, a little farther below the sternal notch than usual, the point being upward and to the left. Upon introduction of the esophagoscope, without anesthesia, the pin was not found at the site indicated in the radiograph. It seemed unwise to search the deeper esophagus at this time because the child became quite dyspneic after the esophagoscope passed the cricopharyngeus. I therefore withdrew the tube and an immediate fluoroscopic examination showed the pin at the hiatus lying anteroposterior, point posterior. After remaining at the hiatus three days, the pin passed into the stomach, where it remained eleven days; two days after leaving the stomach it passed through the anus, having spent sixteen days in the digestive tract. The child nursed all the time without difficulty and was apparently normal in every way. In this case I had the mother feed the child some cereal and bread and milk and Dr. Grier fluoroscoped the child daily.

Case V.—C. B., male, a normal, nursing infant, ten months of age, was referred by Dr. F. T. Patterson, of Washington, Pa., March 11, 1921, with a history of having swallowed an open safety pin four hours previously. The röntgenologist, Dr. George W. Grier, gave me the following report: "X ray examination of Baby C. B. shows a small safety pin in the esophagus, open, breech down. The pin lies crossways of the body, the guard end of the pin being to the left side and the sharp end to the right. The lower edge of the pin is at the level of the sixth cervical vertebra. This baby has a slight enlargement of the thymus and a deformed trachea, there being a bend in the trachea about the level of the first dorsal vertebra."

I did esophagoscopy without anesthesia but not finding the pin after one minute and bearing in mind the enlarged thymus and deviated trachea, I withdrew the tube and had another radiograph taken. The radiograph showed the pin had shifted its position to the level of the fifth dorsal vertebra.

There was no reaction following esophagoscopy, no interruption of nursing and as the infant was normal in every way, I waited until early morning of March 13, 1921, before doing another esophagoscopy. At esophagoscopy, without anesthesia, I seized the keeper and rotated it to the right until I could see the breech. Then seizing the breech withdrew pin and tube together without any difficulty in three minutes and forty-four seconds. There was no interruption of nursing, no reaction, and child was discharged well in twenty-four hours.

Of the five cases of open safety pin in the gastrointestinal tract all but one were babies under eleven months of age. The pin was in the stomach of one patient when admitted. In one other case it reached the stomach after admission. In both of these cases the pin passed through the intestinal tract harmlessly. In three cases I removed the pins from the esophagus by esophagoscopy, without anethesia, general or local. All three infants were discharged well the next day. The pins in Cases I and IV were exactly the same size, open at the same angle, yet the pin passed through the whole digestive tract of a seven months infant in five days, and lodged three days at the hiatus, eleven days in the stomach or sixteen days in the digestive tract of a twelve months old child. The pin in Case V was much smaller than in Cases I and IV, yet it lodged in the esophagus at the fifth dorsal vertebra for thirty hours.

Conclusions.

1. As to prophylaxis, the great number of cases of safety pins, usually open, in babies, seems to call urgently for a warning against leaving pins within their reach. Since these accidents with nursing babies usually happen through ignorance on the part of the mothers, I think all pediatrists and all nurses connected with public health nursing and milk stations should caution mothers not to stick pins in the front of the dress while changing the babies. They should be cautioned to have diaper pins fastened together by chains, together with the small safety pins for the stockings. This simple precaution would avoid a serious accident which might endanger the life of the child.

2. An open safety pin that has reached the stomach may pass through the intestinal tract harmlessly in five days, but this does not justify incurring the great danger of attempts to push it down and the pins should be watched daily with the fluoroscope. Dr. Chevalier Jackson (1) reports one case where an open safety pin was regurgitated into the esophagus after a seven weeks' sojourn in the stomach of a twelve months old child.

3. Open safety pins that lodge in the esophagus should be removed at once by esophagoscopy, without anesthesia.

4. Compression of the trachea by an enlarged thymus is enormously increased by engorgement during esophagoscopy.

5. This compression is increased by overextension of the head.

6. Before doing esophagoscopy on young children, especially under twelve months of age, the size and condition of the thymus gland should always be determined as far as possible.

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1018 Westinghouse Building.

Two Cases of Lung Tumor Treated Bronchoscopically*

By SIDNEY YANKAUER, M.D.,
New York.

Case I.—A man, twenty-eight years of age, was admitted to the medical service of Mt. Sinai Hospital on September 26, 1920, stating that eight weeks before he awoke suddenly with chills, fever, nausea, headache and pain in the left side of the chest. These symptoms continued intermittently up to the date of admission. Cough and profuse, purulent expectoration increasing in amount were present during this time and there was considerable loss of flesh and strength. Examintion of the chest showed on the left side delayed and diminished expansion, dullness on percussion above, merging into flatness in the lower part of the chest; voice and breathing diminished above, absent below. The sputum was negative for tubercle bacilli, there was a moderate leucocytosis, distinct clubbing of the fingers and temperature above 103°. Radiograph showed an infiltration of the greater part of the left lung from the apex to the base with the heart drawn to the left side.

The patient was then transferred to the surgical division for aspiration. He was aspirated twelve times in different places with negative result. Following the aspiration, a pneumothorax developed. Radiograph taken at this time showed the consolidated lung drawn towards the hilum, with an area of pneumothorax adjacent to the chest wall. The pneumothorax gradually disappeared, but the symptoms, physical signs and general condition of the patient remained about the same.

On November 11th, I made a bronchoscopic examination for diagnostic purposes. I found the left main bronchus to be normal in size, color and contour for a distance of two cm. from the bifurcation. At this point, the lumen ended abruptly being closed by a mass covered with smooth, normal looking mucous membrane. Examination with the probe showed that the mass was attached to the outer wall of the bronchus above the opening of the upper lobe branch, leaving only a minute opening in the anterior part through which pus was seen coming with each expiration. The appearance of the tumor resembled so closely a fibroma of the bronchus in nearly the identical situation which I reported before the laryngological section of the New York Academy of Medicine in 1916 that I did not hesitate to make the diagnosis of benign tumor.

On November 16th, under local anesthesia, an attempt was made to pass a snare around the tumor, but as the base of the mass was too wide, the snare would not take hold. The mass was then removed piecemeal with biting forceps. Immediately after the removal of the tumor, breathing could be faintly heard in the lower part of the chest. Microscopic examination of the tumor showed it to be a pure fibroma.

On December 13th the patient's general condition was much improved, the cough had ceased, the patient had gained in weight, and the physical signs in the chest had almost entirely cleared up. A bronchoscopic examination made at this time failed to disclose any remnants of the tumor. A radiograph made on December 22nd showed only a small infiltration at the extreme left base. At the time this report was made the patient had no symptoms of any kind and was apparently completely cured.

Case II.—This patient, a man of fifty, was first seen by me on September 1, 1920. He stated that since 1918 he had suffered from cough, increasing in severity, with an increasing amount of expectoration, which occasionally was blood stained. He also had pain in his left chest. His previous health and family history were good. A radiograph taken in the early stage of his disease showed the presence of an old healed tuberculosis, of which the patient was ever conscious, in the right upper lobe, and believing that the patient was suffering from a recrudescence of his old tuberculosis, his physician sent him to Saranac. Here he was repeatedly examined. Tubercle bacilli were never found, but on the contrary, physical signs appeared in the lower part of the left chest, and a shadow appeared in the radiograph. His condition became decidedly worse in the course of the year, so that he was sent back to New York. Here the diagnosis of lung tumor was made by the internists, by exclusion.

On September 10, 1921, a bronchoscopic examination was made for diagnosis. I found the lower part of the left bronchus, below the opening of the upper lobe branch, completely occluded by the pressure of an intrabronchial mass, which apparently made pressure on the anterior and external walls of the bronchus. The mucous membrane, especially on the external wall, was thickened and granular in appearance, suggestive of malignancy. A specimen was removed for examination, but the pathologist reported that it consisted of inflammatory tissue only. The radiograph at this time showed a mass extending from the fifth rib to the diaphragm, and from the heart shadow nearly to the outer wall of the chest. On fluoroscopic examination it could be shown to be free from the heart and from the diaphragm.

In the absence of a positive diagnosis of malignancy the case was treated as a lung abscess by irrigations with iodine solutions. After six weekly treatments, although the cough and expectoration were considerably diminished, the occlusion of the bronchus, as seen in the bronchoscope, had increased, having by this time reached nearly to the level of the upper lobe branch. Treatment with radium was therefore begun. The radium was applied in the form of radium emanations. These emanations were contained in a metallic capsule, covered with rubber, so that the rays were filtered through one quarter mm. of silver, one mm. of brass and one mm. of rubber. The capsule contained fifty to sixty m. c. of emanations. It was introduced into the bronchus

*Read at the fourth annual meeting of the American Bronchoscopic Society, June 1, 1921.

through the bronchoscope, and a cord attached to the capsule was left hanging from the mouth . It was well tolerated by the patient and was removed after four to six hours. At the same time two external applications were made, one below the angle of the scapula and another in the anterior axillary line, the applicators being flat rectangles containing the emanations, about seventy-five m. c. each. These applicators consisted of eight to twelve emanation tubes encased in silver one quarter mm. thick, and filtered with two and a half mm. brass, two mm. leather and two cm. gauze. They were left in place about twelve hours. Eight of these applications were made, at intervals of two weeks. Between these applications, the bronchus was irrigated and an external application only made. Altogether the patient received in fifteen weeks two thousand m. c. intrabronchially and twenty-five thousand m. c. externally.

The first radium application was made on October 22d and by December 1st the patient's condition, both subjectively and objectively, as well as in the bronchoscopic picture, had improved materially, as shown by a radiograph taken on December 1st. On December 17th a radiograph showing the capsule in position was made, and showed an additional improvement.

At present the patient is entirely free from cough and expectoration, he has increased in weight and in strength, and feels subjectively like a well man.

He suffered no inconvenience from the radium applications except a discoloration of the skin of the chest, with some desquamation and pruritis, and he has suffered an attack of herpes zoster over the burned area, but this was only a temporary inconvenience. The ultimate outcome of the case will be recorded at some future time.

616 Madison Avenue.

Treatment of Suppurative Conditions of the Lung*

By T. E. CARMODY, M. D.,
Denver, Col.

The subject under discussion must necessarily include something concerning etiology, for upon this in many cases depends the method of treatment. We shall therefore first discuss the avenues and processes by which infection takes place.

Many times infection probably takes place through the lymphatics, from suppurative conditions above, as from the tonsils, teeth, or sinuses, and the excellent work along this line with which such names as Robertson, Wood and Mullin are connected must be considered. Whether or not we agree that the larger percentage of chest infections are received in this way, we must admit that the supply from these sources lays a vast burden on the otolaryngologist if he is to accomplish anything in the prophylaxis of these maladies. The lymphatics from the tonsil drain into the anterior triangle, as do also those from the lower teeth, while lymph vessels from the nasopharynx drain into the posterior triangle. The superficial cervicals continue downward to the root of the neck, to the apex of the lung and the thoracic duct, while the deep chains descend to the mediastinum and hilum. This has been amply proved by the experiments of the workers mentioned above and others and by clinical evidence, as mentioned by New and myself, as well as postmortem evidence.

Hematogenous infection, while difficult to prove in living patients, cannot be denied, as shown by Adami, Delafield, and others. However, we think chest infection by this route occurs much less frequently than the writings of many would have us believe. We may have infection carried from those portions of the oropharynx in which there is partial stagnation of secretions and in which we find large plexuses of veins. Here may be a place of entrance for infectious material which could easily pass through the heart to the pulmonary circulation, if infection took place in this way, which is probably not often the case. The location of abscesses in the lungs might at least lend weight, but the history of most cases will be the reverse. Is it possible that the great number of lung abscesses following tonsillectomy may be caused in this way?

If the contention of Clendenning and others is correct, that these abscesses are caused by the motor driven anesthetic apparatus, it is probable that they are caused by the chilling of the lung tissue by driving cold ether under pressure into the alveoli or even into the tissues. This we know is not true with the apparatus of the same type in which the ether is warmed. While this may be the cause, as many more abscesses have followed tonsil operations since this form of apparatus has been adopted, it is also true that many more tonsil operations are performed now than were done with the old anesthetic methods. Furthermore, we do not now see postoperative pneumonia which was so much feared a few years ago.

Infection carried into the lung by foreign bodies will be found to be the most frequent cause of abscess of the lung and bronchiectasis. That we may have foreign bodies which are either sterile or at least fail to carry any virulent infection to these tissues, is admitted. As most abscesses following foreign bodies that have been *in situ* for some days or weeks, it is possible that pressure necrosis and lack of drainage play an important rôle, as cough is inefficient and ciliary action prevented.

We also believe that abscesses following tonsil and adenoid operations may be called foreign body abscesses, for the reason that small pieces of tissue, blood clots, or fluids may be aspirated and these are likely to be infected or carry infection with them. In the cases in which the tonsils have not been removed, or there has been no other operative pro-

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cedure in the nose or throat, we could still have infection aspirated as a foreign body, either as pns from the sinuses and teeth, or caseous plugs from the tonsil. The cavitation which takes place in tuberculosis is dissimilar, although injury from small foreign bodies may play a part in the formation of the tubercle.

When foreign bodies are removed within a few hours after their lodgment, they usually do not cause much damage, and it has been our experience that the larger bodies which more or less completely fill the bronchus are infinitely worse than sharp objects. We have also observed that in cases of infection caused by foreign bodies, even after their removal, the chest is more apt to be involved on the affected side during subsequent colds. My attention was called to this fact by Gengenbach, Kennelly, and Amesse who have followed a number of my patients. It has been suggested by Wasson and others that we may have a specific organism or group of organisms in these cases. At present we are carrying on some work along this line, but it has not progressed far enough yet to draw conclusions. A question which might naturally suggest itself is, What produces the softening of the surrounding tissues? Our attention has been directed to this condition by Lynah and Stewart, as well as the fact that we do not as a rule see a distinct cavity through the bronchoscope.

A point which we have not seen mentioned in the literature on this subject is the apparent distensibility of the bronchi on inspiration, which is not seen to any extent in the normal. Some of these bronchi collapse as if the cartilaginous rings were absent or had lost their resiliency. This condition probably accounts to some extent for the poor drainage and failure to resolve in chronic cases, as these are the only cases in which this condition is found. We may also find stenosis from granulation and connective tissue as suggested by Lynah. Many of these patients show clubbing of the fingers and the oval nail with passive hyperemia, the same as in tuberculosis.

The patients in this series have been aspirated by use of the motor driven aspirating pump or by use of the tube with closed end to prevent injury to the mucosa, as the ordinary tube is apt to do. Yankauer's irrigation method has been employed in only two cases and in one of these on only one occasion.

An attempt to outline cavities with bismuth subcarbonate has not been found to be successful. The bismuth oil of Lynah has not been used. Granulation tissue has been touched with iodine of from two to three per cent. strength, or with silver nitrate, one per cent.

Case I.—L. P., aged thirty-two, tuberculosis with cavity formation for several years. The patient was aspirated and washed on two occasions, the last time being at his request in 1916. This patient died of a cellulitis of the neck a few days after the second bronchoscopy, which was done under a local anesthetic and which may have been largely responsible for the death, as there was a great deal of coughing in spite of the fact that a fourth of a grain of morphine sulphate and one one hundred and fiftieth of a grain of atropine were given. For this reason some of the earlier cases were given a general anesthetic. We find, however, that if the morphine is given early enough, the cough is kept under fairly good control.

Case II.—Miss A. S., aged eight, was seen in August, 1916, and the following history given: Three weeks previously she had aspirated a large buckshot. Since that time she had not been well and had coughed a great deal. On entrance to the hospital she had a temperature of 104.2°. An x ray examination showed the bullet in the lower left bronchus with quite a shadow directly above. An attempt to remove the bullet under fluoroscopic bronchoscopy resulted in pushing the body down the bronchus from one eighth to one fourth of an inch. Immediately from the opening of a bronchus superior to this, pus flowed freely into the main bronchus, continuing until from one half to two ounces were aspirated, when it ceased. Further effort at removal was not made. Temperature dropped to 99.2° in four hours and became normal within seventy-two hours. The parents refused to allow a second attempt to be made at removal and one year later the foreign body was coughed up. The parents reported that the child had no further trouble.

Case III.—P. M., male, aged four, was referred by Dr. Geise, of Colorado Springs, in September, 1920, with the following history: About eighteen months previously his parents were awakened by a cry and what they explained as apparently inability to take in air (inspiratory dyspnea). At that time the patient was in fairly good health but underweight for his age. His fingers were clubbed, he coughed, and was restless at night. Tonsils were removed six months ago, but after this trouble was well established. Dr. Geise reported moist râles in base of right lung which also showed shadow in skiagram. The child's grandmother stated that at the time of the accident he was in the habit of chewing gum, and probably went to bed with some in his mouth, which was aspirated and caused the symptom stated above. The patient was bronchoscoped under warm ether and pus was aspirated from right lower bronchus. On the second aspiration ten days later many flakes came away. These were thought to be particles of gum, but they were not examined. They resembled the flakes coming from tissue in paraffinoma. From this time on improvement was steady, although he was bronchoscoped again six weeks later and a small amount of pus aspirated. Within two weeks he was reported doing well and gaining in weight. We have not seen him for three months.

Case IV.—C. V., aged twenty-two years, was referred by U. S. Public Health Service, June, 1920, for bronchiectasis. The patient coughed a great deal, raising in twenty-four hours about three hundred c.c. of sputum which was practically pure pus. He was gassed during service in France. His tonsils had not been removed, and on examination, his nose was found to have a chronic pansinusitis. Radical double frontal and ethmoid operations were performed and both maxillary sinuses washed. He was aspirated three times at six day intervals with pus becoming less each time. The sphenoids were opened on February 10, 1921, and in March there was a marked hemorrhage from left sphenoidal sinus which was checked by packing. Since that time pus increased

somewhat and at next aspiration bronchi were washed with normal saline solution. Whether due to the washing or drainage from the sinuses, there was a slight increase in expectoration. He was last aspirated on May 27th, hemorrhage resulting after all pus was removed. The bronchoscope was immediately removed, but another hemorrhage took place twenty-four hours later, since which time only old blood from cavity had been coughed up, the patient having been kept quietly in bed. This patient gained twenty pounds in weight since the first aspiration and felt well despite the hemorrhage.

It will be noted that there was no history of tuberculosis; repeated sputum examinations were negative. The hemorrhage in this case was probably due to slight injury from the tube or from the aspirator. Guineapig inoculation by Dr. Hillkowitz on May 25th with secretion from bronchi revealed no lesion of tuberculosis.

Case V.—L. G., aged twenty-five, was referred by U. S. Public Health Service, in February, 1921, for abscess of lung, situated in the lower right lobe. The history as to cause was negative. Tonsils were hypertrophied and infected. The patient was aspirated at six day intervals, but not washed, five times in all. At the time of the first aspiration, the patient was raising one hundred to one hundred and fifty c.c. of pus in twenty-four hours. This amount was lessened about fifty per cent. and the patient gained seven pounds. Guineapig inoculation proved negative in this case also.

Case VI.—G. C. L., aged twenty-eight, was referred by U. S. Public Health Service on May 20, 1921. This case illustrates how the history of a foreign body may be ignored. The patient had been in the army from May 18, 1918, to July 23, 1920, and was given S. C. D. on "account of chronic bronchitis." History prior to service: Typhoid fever in 1906, measles in 1914, no pneumonia. History during service: On evening of January 1, 1919, was holding pencil point protector in his mouth when he was struck on the back by a comrade. He inhaled the protector, which was about an inch and a half long and made of metal. A severe pain immediately developed in left lower chest with paroxysms of coughing. He went on sick report next morning, told about accident but was not believed. He manifested "acute appendicitis" and was sent to hospital for emergency operation, but a diagnosis of pneumonia was made and no operation performed. He repeated the story of the accident, but no x ray was taken. He was coughing continually and also spitting blood, but was sent back to duty about January 19, 1919. He was readmitted to hospital on January 25, 1919, and a diagnosis of influenza was made. Later measles developed. He was transferred on March 10, 1919, to Base Hospital 103, Dijon, France.

He again repeated his story and was fluoroscoped but no foreign body discovered. He was transferred to various hospitals in France and then sent to the United States, to General Hospital 19, Oteen, N. C. X rays were taken but no foreign body discovered. He stopped telling of aspirating the pencil protector because his story was not credited. He was operated upon on May 8, 1919, for appendicitis, and transferred to General Hospital 21, Colorado. X ray showed foreign body in left lower lobe and the diagnosis was: Nontuberculous, after sixty-seven negative sputum examinations. Transferred to Walter Reed Hospital, Washington, D. C., April 24, 1920. On May 27, 1920, fragments of protector were removed through bronchoscope from left bronchus by Dr. Chevalier Jackson, at Jefferson Hospital. Patient discharged from hospital and army July 23, 1920, much improved. He noticed, however, that every time he contracted a cold it affected the left lung more than right, and he always felt some pain in the left chest on deep breathing. Occasionally he spat up blood streaked material, and almost pure blood when he had a cold. He coughed a great deal during the day and raised about four ounces of sputum in twenty-four hours, but did not cough during the night. Since his discharge, no hospitalization had been necessary. The patient is at present taking vocational training in agriculture.

A physical examination showed the constitutional symptoms to be a cough, with copious, rather foul, thick expectoration, increased by stooping posture or lying with head low. His height was sixty-seven inches, weight at present, 146 pounds, normal 152 pounds. His temperature was 98.6°, pulse 74. His color was poor, general nutrition fair, marked clubbing of fingers; chest about normal in contour with prominent clavicles; heaving apex impulse in fifth interspace nipple line, slight lagging in expansion at left base. Resonance was impaired above second rib right and throughout left, particularly over lower left lobe; breath sound suppressed over entire left lung (suppression marked at base, anteriorly). There were variable coarse râles from base to apex on the left, with bubbling râles after cough over lower radiation; left especially marked internal to angle or scapula with marked increase in whispered voice in latter area. Right lung presented only a few scattered variable râles. Heart was normal in size but apex displaced slightly to left (adhesions); no murmurs. Pulmonic second sound was moderately accentuated. A diagnosis was made of severe chronic bronchitis with bronchiectasis; pleurisy, chronic fibrous, left base. The possibility of tuberculosis was not excluded, but was doubtful in view of sixty-seven negative sputum examinations.

The patient was bronchoscoped on May 27, 1921, and about three ounces of pus aspirated from the left lower lobe. Although the right showed a large lymph node in the skiagram, which was thought to be a foreign body, it was entirely normal.

It was found necessary to remove granulation tissue in these cases. Silver and iodine solutions caused sufficient contraction to give better drainage. The position on the table was semi-Trendelberg or Jackson. In either of these positions pus would at times flow out of the bronchoscope and saved a certain amount of aspiration. Powder blown into bronchi had not produced sufficient shadow to show in skiagram. Catheter would show in cavity, and should curl if cavity was large enough, thus differentiating between abscess and bronchiectasis. The aftertreatment consisted of placing the patient in bed with the foot raised eight to ten inches. Inhalations of compound tincture of benzoin or terebene were used the same as has been done for years in tracheotomy cases.

Metropolitan Building.

Pneumoperitoneum as an Aid in the Diagnosis of Cardiospasm*

By SAMUEL IGLAUER, B. S., M. D.,
Cincinnati.

Our knowledge of the cause of the symptom complex commonly called cardiospasm still remains obscure. According to Jackson (1) the term cardiospasm is rather a misnomer since spasm limited solely to the cardia "is exceedingly rare, while spasm of the abdominal esophagus and of the esophagus at the hiatus either separately or together are relatively common." It seems likely that the anatomical relations of the lower esophagus play a considerable rôle in the causation of esophagismus. The original work of Mosher (2), revealed the intimate association of the abdominal esophagus and liver. He stated that "below the diaphragm the esophagus passed through a tunnel of liver"—and added, "I have come to the conclusion that the liver is the chief factor in determining the form and position of the subdiaphragmatic portion of the esophagus." He draws the theoretical conclusion, "that as the chief cause of deformity of the lower end of the esophagus is pressure from the surrounding liver, etc., and this pressure might be relieved by suspending the liver by shortening the round ligament or by advancing the left lobe of the liver and suturing it to the diaphragm if this could be made feasible."

Fig. 1.—Enormously dilated esophagus filled with barium mixture showing complete obstruction at the cardia.

In the study of cardiospasm, x ray examination and esophagoscopy give valuable information concerning the functioning and the lumen of the esophagus. However, if the spasm is due to some pathological process surrounding the subdiaphragmatic portion of the esophagus the diagnosis of the cause is by inference rather than by direct demonstration. In the study of a case of this kind, which came under our observation at the Cincinnati General Hospital, neither the röntgenologist, Dr. Carl Little, nor myself, could by ordinary methods determine the true condition of the abdominal esophagus. We therefore decided that some light might be thrown upon the subject by examining the patient with the aid of pneumoperitoneum. In this we were not disappointed, since the pneumoradiograms obtained revealed the underlying pathological conditions.

Case.—The patient, a negro, aged twenty-four years, after convalescing from bronchopneumonia was sent to the x ray laboratory on February 16, 1920, for a chest picture, in which Dr. Little noticed a huge mediastinal shadow, which he interpreted as the dilated esophagus. This, if I may coin the word, was a veritable "hydroesophagus" containing fluid previously swallowed by the patient. The ingestion of barium confirmed the diagnosis. On February 16, 1920, stereoscopic x ray plates of the chest showed no evidence of a pathological condition in any part of the lung tissue, but there was shown an enormous dilatation of the esophagus. On February 17, 1920, fluoroscopic and plate examination after the ingestion of barium meal showed an enormous dilatation of the esophagus with complete stricture at the cardia (Fig. 1). The patient regurgitated practically all food and was so weak and emaciated that gastrostomy was promptly performed by Dr. J. L. Ransohoff, on February 19, 1920.

At first despite the ample food intake the patient failed to gain in strength, and remained bedridden for a prolonged period. Food by mouth was usually regurgitated. The Wassermann reaction was negative. Three months after the gastrostomy he was up and about. At this time an esophagoscopy, under ether, was undertaken.

While inserting the esophagoscope it was found that the dilated esophagus was full of decomposed foul smelling food, which had probably collected for weeks. This was cleaned out by means of sponges and the aspirator. Slight ulcerations were found on the anterior wall close to the hiatus, which were probably due to the irritation caused by the stagnated and decomposed material. It was not possible to pass a bougie into the stomach. Owing to the enormous amount of stagnated material it was not possible to examine the esophagus closely. Five weeks after the esophagoscopy the x ray report was, "complete closure just below the diaphragm." Pneumoperitoneum was then decided upon.

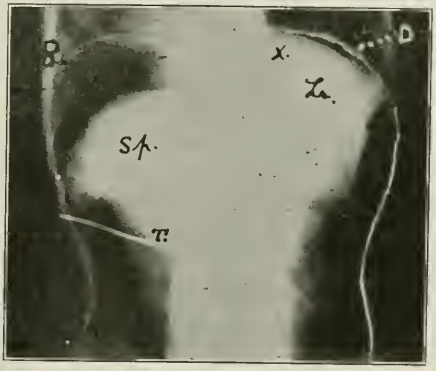

Fig. 2.—Röntgenogram taken after pneumoperitoneum showing adhesions of the internal border and dome of liver to right diaphragm at X; D, right diaphragm; B, left diaphragm; Lr, right lobe of liver; Sp., Spleen; T, rubber tube in stomach. Note wide separation between left diaphragm and spleen in contrast with the slight separation on the right side which was due to the adhesions. Owing to faint outline in reproduction the right diaphragm and the right abdominal wall have been retouched in ink.

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Dr. Little reported as follows: "July 7, 1920. Fluoroscopic and plate examination following the ingestion of barium meal and after injection of oxygen into the abdominal cavity and after the introduction of air into the stomach through the surgical sinus shows gross dilatation with complete stricture of the esophagus, and shows the stomach to be somewhat increased in size. The liver is somewhat enlarged and the inner border is adherent to the right diaphragm. The spleen is normal and the left diaphragm is in normal position. From an x ray viewpoint it is suggested that stricture in esophagus is due to encroachment of liver upon esophagus with the probability of adhesions in this area" (Fig. 2).

Three weeks after the pneumoperitoneum, daily irrigations of the esophageal pouch was begun, and this proved beneficial to the patient. A second esophagoscopy two months after the pneumoperitoneum showed the esophagus still markedly dilated. The mucous membrane, however, was pink and apparently in good condition. Two bougies were passed into the stomach. After returning to the ward the patient vomited a large amount of food which he had put into the stomach. Vomiting of part of food put into stomach continued for four days, after which he began swallowing without regurgitation. The gastrostomy opening was kept patent merely for urgency. The patient felt well and continued gaining. Three weeks after the esophagoscopy, the gastric fistula having closed, the patient was in good condition, while fluoroscopic examination showed a patent cardia.

From the evidence offered by pneumoperitoneum it seemed likely that the symptoms of cardiospasm in this case were due to the adhesions between the diaphragm and the liver encroaching upon the subdiaphragmatic esophagus. Several factors probably led to the marked improvement in this patient. First, the gastrostomy which kept him alive and which placed the esophagus at rest over a prolonged period. Second, the daily alkaline irrigations of the esophagus were beneficial to the inflamed and ulcerated mucosa. Third, after the second esophagostomy and passing the bougies into the stomach, improvement was rapid.

It will be recalled that the patient upon moving experienced a flopping sensation in his abdomen after the introduction of the oxygen. In this connection it is just possible that the pneumoperitoneum may have loosened some of the liver adhesions and this in turn may have freed the esophagus and led to the marked improvement of the patient soon after the abdomen had been inflated. The use of pneumoperitoneum has been limited chiefly to the diagnosis of abdominal and pelvic conditions. So far as I am aware it has not hitherto been employed in the diagnosis of cardiospasm, the symptoms of which are chiefly supradiaphragmatic. In a similar case, should the pneumoröntgenograms reveal an adherent liver, it might be feasible, under anesthesia, to free the adhesions by manipulation through the abdominal wall. The use of oxygen as an inflatant tends to prevent the reforming of adhesions since this gas is not absorbed in less than seven or eight days.

Judging from the experience gained in this case, pneumoperitoneum should be of considerable value in the study of similar obscure cases of cardiospasm. The procedure is practically free from danger (3) and according to Stewart and Alvarez, by inflating with carbon dioxide instead of oxygen or air, the discomfort of the patient is greatly diminished, since the carbon dioxide is absorbed within thirty minutes.

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Hodgkin's Disease in Which Endoscopy Led to Diagnosis*

By LEE M. HURD, M.D., F.A.C.S.,
New York.

Case.—F. G., female, twenty years of age, first consulted me on January 20, 1920, because a throat specialist wished to operate on the septum and some part of the throat to relieve cough. She had had a dry cough for a year and a half which had grown much worse during the past four months, and pain over the left eye and left side of face for the past three months, which usually occurred in the afternoon or evening. There was a moderate nasal discharge, but no impairment of breathing. Adenoids were removed sixteen years ago. There was no sore throat, the teeth and ears were normal, and there was occasional hoarseness. She had lost ten pounds in the past four months. There were no night sweats or fever. Her appetite was poor and she was constipated. She slept well.

Examination of the nose showed a pale mucous membrane, a slight deviation of the septum, and hypertrophied middle turbinate. Larynx and trachea, by laryngoscopic examination, were found normal. The Wassermann reaction was negative; von Pirquet was positive; small gland behind left clavicle. Blood count was 5,200,000 red corpuscles; white blood corpuscles, 16,000; polymorphonuclears, eighty-nine per cent.; small lymphocytes, five per cent.; large lymphocytes, five per cent.; eosinophiles, one per cent. Urine was negative except for a slight trace of albumin.

Under morphine one quarter grain, atropine one one hundredth, and alypin, the bronchoscope was passed down the left bronchus one inch below the carina where there was constriction and congestion. Manipulation about the constriction produced intense coughing which a second dose of one quarter grain

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of morphine did not control. The blood count on May 2, 1921, was white blood corpuscles, 10,600; polymorphonuclears, seventy-five per cent.; small lymphocytes, twenty per cent.; large lymphocytes, four per cent.; basophiles, one per cent.

An x ray examination was made by Dr. H. M. Imboden. There was a shadow on the left side which suggested that it arose from the root of the lung, but it did not seem to have any connection whatever with the aorta. A dense shadow was also found superimposed upon the arch of the aorta. This might be due to the same cause as the shadow previously described. The mass projected slightly into the posterior mediastinum, and as it projected into the mediastinum, it seemed quite smooth in outline. This mass pulsated somewhat, but the pulsation was probably transmitted from the aorta. It certainly was not extensive. There were definite changes in the base of the right lung, probably due to pressure from the mass in the left side.

A physical examination was made by Dr. Warren Coleman. The patient looked pale and ill. The heart, throat and teeth showed nothing abnormal. The thyroid was enlarged, especially the right lobe. The heart was negative. There was dullness over the roots of both lungs, and both lower lobes were imperfectly aerated. Both respiratory murmurs were slightly prolonged over the lower lobes. The chest was otherwise negative. An examination of the abdomen showed both recti very rigid, but moved with respiration. Spleen and liver were negative. There was tenderness in both iliac regions, especially on the left, low down. Indefinite resistance was felt deep down in the left iliac region suggesting the possibility of glandular enlargement.

The diagnosis was probable Hodgkin's disease. The gland was removed from behind the left clavicle and submitted to Dr. James Ewing. His report was as follows: "The supraclavicular lymph node shows the changes of an atypical Hodgkin's granuloma. The section shows obliteration of all normal landmarks by irregular new tissue, composed of lymphocytes, many reticulum cells, a few eosinophile cells, much fibrosis, no necrosis. The lesion is of rather long standing, and the node hard and fibrous. The structure is not entirely typical of Hodgkin's granuloma, but it is not a tumor, and is not tubercle or lues, so that by exclusion the diagnosis of Hodgkin's disease is highly probable. There are in addition many of the histological features of Hodgkin's disease."

The patient has been under x ray treatment, the mass in the mediastinum is slightly smaller, and the cough is better; otherwise no perceptible change.

The Clinical Study of the Biliary Secretions Obtained by Nonsurgical Drainage

By G. W McCASKEY, M. D.,
Fort Wayne, Ind.,
Professor of Medicine, Indiana University School of Medicine.

The problems of differential diagnosis encountered in the right upper abdominal quadrant far exceed in frequency and difficulty those of the other three quadrants combined. The reason for this is found in the variety and clinical importance of the structures located within this area, which includes the bile passages, with the gallbladder, which has heretofore been considered too much as an isolated entity, a part of the liver and pancreas, and the gastroduodenal zone. Thus the diagnostic uncertainties recognized by all clinicians, both surgical and medical, are easily explained. Fixing our attention especially upon the biliary apparatus, the diagnostic data hitherto available in its study may thus be summarized: clinical history, symptomatology, physical signs, certain collateral laboratory findings and x ray evidence. Now in many cases, these data are notoriously insufficient. In the field of laboratory research there has, until quite recently, been an almost complete absence of any direct information relative to the biliary mechanism, such as is available in the clinical study of the stomach and kidneys.

The x ray study of the biliary mechanism, while admittedly important and occasionally decisive, is, on the whole, disappointing. This is especially true of gallstones, only a relatively small percentage of which can be positively recognized by the x ray. The uncertainty of the positive findings is emphasized in a recent paper by Bassler (1). In a series of his cases in which a positive x ray diagnosis of gallstones was made, the diagnosis was found to be wrong in sixty-eight per cent. When we take into consideration the further fact that one half or more of all gallstones fail to cast a definite shadow, the limitations of x ray diagnosis in this field, even with the best of the technic and with the Potter-Bucky diaphragm, must be painfully obvious.

In a certain group of cases with definite pain and tenderness and recurring chills and fever, no doubt the diagnosis can be made with confidence by means of the other data enumerated. There probably is, however, no group of symptoms indicative, e. g., of cholecystitis, which may not be simulated by adjacent pathology. Such being the facts every clinician must feel the pressing need for additional information. With the discovery by Meltzer (2) that the application of magnesium sulphate, to the duodenum at the entrance of the common duct stimulates an increased flow of bile, and with the subsequent clinical application of this discovery by Lyon (3), it seems to me that a new and important source of information has been added to our clinical study of the biliary apparatus. The clinical importance of the subject is so great that it seems worth while at this time to review the subject in the light of my own experience, with the view of attempting an

appraisal of its real value, its limitations and its uncertainties.

Meltzer (2) explained these phenomena, so far as the emptying of the gallbladder is concerned, by formulating his socalled law of contrary innervation, which does not appear at this time to need further elucidation. Oddi's sphincter at the papilla of Vater has been recently restudied by Crohn (4) and Mann (5), fully confirming the existence of an efficient sphincter, the fibres existing not as a definite isolated ring, but scattered through the structures surrounding the papilla. A very valuable study of the function of this sphincter has recently been made by McWhorter (6), who also quotes similar work of Archibald (7) and Mann (8) by operative methods in both human and animal subjects. The efficiency of the sphincter is indicated by the fact that it requires a pressure equal to several hundred millimetres of water to overcome its resistance, leaving no doubt as to its function in controlling the orifice. In fact McWhorter (6) found it difficult to overcome its tonicity as a prospective surgical procedure, by incisions without making the latter so deep that he was afraid of penetrating the entire thickness of the intestinal wall. He further found that the instillation of magnesium sulphate solution, twenty-five per cent., relaxed the sphincter sufficiently greatly to lower the pressure required to overcome its resistance, although it did not cause its complete relaxation. This furnishes important confirmation from a surgeon, of Meltzer's original observation, at least so far as the sphincter is concerned.

In view of all these observations, there can no longer be any doubt as to the validity of the assumption of a sphincteric control of this orifice.

One interesting observation by McWhorter was a lowering of the tonicity of this sphincter by the removal of the gallbladder, indicating the physiological relationship of the sphincter to the gallbladder.

The detrusor muscle of the gallbladder consists of nonstriated fibres scattered through the fibromuscular coat, the function of which, if it has any, must be obvious. It is extremely probable that under normal conditions and with proper stimulation it is capable of at least partially emptying the gallbladder. For what other possible purpose could it be there?

The function of the entire biliary apparatus is probably controlled to a large extent by stimuli derived from the duodenal mucosa, and also very probably from "advance" reflex stimulation from the gastric mucosa. This applies not only to the motor action of the special reservoir known as the gallbladder, but also to the rate of secretion of bile, and consequently the flow of the latter through the ducts. These stimuli may be regarded, at least, in part, as hormones, probably derived mainly from the gastric contents which are carried into the duodenum, and act upon the gallbladder and secreting cells of the liver at that period of digestion when the bile is required. By the law of contrary innervation, if we please so to designate it, Oddi's sphincter, which at least partially blocks the flow of bile when the latter is not needed, relaxes and permits the flow of the latter into the duodenum. Undoubtedly the magnesium sulphate acts in much the same manner when applied as in the clinical method under consideration. The acceleration of the flow of bile in response to this artificial hormone is very marked, as shown by the relatively large amount of C bile obtained after the gallbladder has been emptied, or at least after cessation of the flow of dark bile, or in cases where the gallbladder has been surgically removed, or the cystic duct has been blocked.

From my experience in about a hundred cases, I can fully confirm the statement that if the bulb of the duodenal tube is located in the duodenum, near the papilla of Vater, and a solution of magnesium sulphate injected through it, in a few minutes there will be a free flow of bile into the duodenum which can be easily aspirated for subsequent study. Contrary to the statement of Bruns (quoted by Meltzer (2)), and the observation of Crohn (4), there is usually in our experience a slight flow of bile, probably due to mechanical stimulation preceding the injection of the magnesium sulphate. The quantity of the bile is nearly always very small until a few minutes after instillation of the magnesium sulphate. Following this we find, with many exceptions, yet with striking frequency, a sequence of different types of bile, which Lyon (3) has designated A, B and C bile. The socalled A bile, under normal conditions, is usually rather small in amount, averaging about ten or fifteen c. c., and of a yellowish color. Then follows, in successful cases, the socalled B bile, thicker in consistency and darker in color, varying considerably in health and still more widely in disease, and which it is assumed is made up in whole or in part (probably in part), of the contents of the gallbladder. The quantity of this B bile is much larger, varying in amount from two to four or five ounces. When the supply of this bile is exhausted the bile again becomes thinner and more yellowish in color, and constitutes the socalled C bile, presumably derived from the hepatic ducts and liver, and which is similar in color and consistency of the A bile. The various types of bile are separately collected for chemical, cytological and bacteriological study.

It is perfectly obvious that the value and dependability of any differential diagnostic conclusions which may be drawn from a laboratory study of these different collections of bile rests upon the validity of their assumed sources and their freedom from confusing extraneous material. I wish at this point, however, to emphasize the importance of a laboratory study of the bile obtained directly from the biliary passages regardless of whether it is derived directly from the hepatic ducts or the gallbladder. We will first consider the question of their origin, as this is fundamental, especially in the differentiation of disease of the different parts of the biliary apparatus.

In regard to the A bile, it could scarcely be other, than the contents of the common duct. The darker B bile is, however, the subject of some dispute. At first sight its cystic origin appears conclusive. As experience accumulates, however, certain facts are met, which require explanation. Crohn (4), for instance, in a valuable study, correlated with surgical findings, obtained this dark colored B bile in a case from which the gallbladder had been removed. He had the gallbladder aspirated during operations and found no constant correspondence between the microscopic contents of this aspirated bile and that of the B bile obtained from the duodenum.

Crohn (9) also injected methylene blue into the gallbladder of eight dogs and obtained the stain from only one after introducing magnesium sulphate into the duodenum.

Dunn and Connell (10) report an interesting observation on a case of hepatoduodenostomy in which gallbladder, cystic and common duct had been previously removed. The bile collected in the duodenum came directly from the liver, through the hepatic duct without any possible interposition of a reservoir of any kind. The observations were made through a duodenal fistula. Magnesium sulphate solution introduced into the duodenum, and again into the jejunum thirty-two cm. below the papilla, in each instance produced a characteristic A B C sequence of bile. When introduced into the colon, only clear yellow bile was obtained. Chemical analysis showed that with the deepening color of the bile there was a corresponding slight increase in its magnesium sulphate content, which must have been absorbed by the radicles of the portal vein, and resecreted by the liver with increased bile pigment and salts.

The quantity of magnesium sulphate which did not exceed fifty-five mg. to one hundred c. c. bile, as stated by the authors, was too small to play any important rôle in the specific gravity of the bile samples. The magnesium sulphate estimations were quantitatively made by Prof. G. T. Myers, of the University of Nebraska. Dunn and Connell (10) found the specific gravity increasing from 1,015 to to 1,040. This great increase must therefore be due to increased quantities of bile pigments, salts, etc., which it is possible may have been excited by the small quantity of magnesium sulphate reaching the liver.

Bassler, Luckett and Lutz (11), in a recent communication, present their conclusions, based on medical and surgical study of clinical material at their disposal, the exact number of cases not being mentioned. This paper was apparently written for the purpose of controverting the grounds upon which Lyon based his conclusion that the B bile is derived from the gallbladder. These reasons, as set forth by Lyon (12), are briefly: First, the acceptance of Meltzer's law of contrary innervation; second, increased color and viscosity of the bile; third, the difficulty of accounting for the dark colored bile on other ground; fourth, entire absence of dark B bile in ten or more cholecystectomized cases; fifth, clinical improvement following biweekly drainage of a group of nonoperated cases of cholecystitis and biliary stasis. These authors do not accept any of these grounds as valid, and conclude that the B bile cannot always be derived from the gallbladder." They conclude that the increased specific gravity of the B bile is dependent upon its increased content of magnesium sulphate, which they determine by a rough precipitation method. This is directly at variance with the conclusion of Dunn and Connell cited above. With these conflicting results before us for consideration we must wait for further work to clear up the question.

These authors obtained the A. B. C. sequence of bile, even more strikingly, by using dilute solution of hydrochloric acid instead of magnesium sulphate which has no bearing on the clinical value of the test, although discrediting the specificity of magnesium sulphate solutions. This does not seem a priori unplausible, because hydrochloric acid, normally present in the chyme, might easily be one of nature's hormones for stimulating the biliary mechanism.

Their claim that the sudden transition to dark bile is due to rapid oxidation, in certain of their cases without gallbladder, is suggestive and entitled to serious consideration, but must await further confirmation. This point will be referred to again.

In its bearing on the question of the origin of the B bile, by far the most important contribution is that of Whipple (13). In twenty-four out of twenty-seven cases of gallbladder disease coming to operation, he made the duodenal injection of magnesium sulphate according to the Lyon technic. In only two of these twenty-four cases did he get the characteristic B bile. In these two cases Whipple found on operation chronic cholecystitis with a patent cystic duct in each case. In the remaining twenty-two cases no bile was obtained in three because of obstruction of the common duct. In the remaining nineteen cases only yellow bile corresponding to the A and C types was obtained. The characteristic dark or B bile was not obtained in any one of these cases which is certainly a remarkable fact if the phenomenon observed by Dunn and Connell and others is not rare. In eleven of these nineteen cases the cystic duct was found entirely closed. In the remaining eight cases there was absence of gallbladder or gross gallbladder pathology in the way of thickened wall, adhesions or many stones, which it can be plausibly assumed would, and probably did, prevent the contractility of the gallbladder. It may be added that this author and investigator accepts, apparently without question, the cystic origin of the B bile saying that "if, after magnesium sulphate instillation there occurs a rapid flow of thick, dark green bile, the cystic duct may be considered patent and the walls of the gallbladder contractile." Whipple emphasizes the value of the preoperative laboratory study of bile obtained by this method as giving the surgeon advance information concerning the pathology of the biliary apparatus.

Smithies (14) considers the B bile of gallbladder origin on the basis of quantity, sudden gush of flow, color and presence of columnar epithelium, which characteristics, he says, are not found in the absence of the gallbladder. He believes that in no case of gallbladder disease should operation be performed without a preoperative lavage of the duodenum, with magnesium sulphate and further, that this should be included in the postoperative management in all cases.

He quotes Sachs (15), Lesner (16) and Friedenwald (17) to the effect that incompletely anesthetized individuals, and on dogs whose duodena have been segregated local introduction into the duodenum of hypertonic solutions of magnesium sulphate, with subsequent early withdrawal produces a definite, visible dilatation of the viscus, contraction of the gallbladder and of the bile ducts, with outpouring of bladder and liver bile.

Friedenwald and Morrison (18) consider the study of bile obtained by duodenal intubation as of prime importance and do not consider a search for focal infections complete without it. As a therapeu-

tic measure in catarrhal jaundice aud chronic cholecystitis, it has proved very valuable in their hands.

Einhorn (19) does not accept the Meltzer-Lyon contention that the dark colored bile is derived from the gallbladder. In his experience the *transition* from light to dark and dark back to light was *very gradual,* and is due, in his opinion, to the increased quantity of the magnesium or other salt absorbed into the portal stream and resecreted by the liver. He found this dark colored bile in patients from whom the gallbladder had been removed.

If dark colored B bile is obtained in the absence of a gallbladder, three possible explanations suggest themselves; first, an accessory reservoir caused by a duct ectasia; second, a sudden change in the liver secretion due to stimulation by magnesium sulphate or other chemical used; third, a rapid increase in oxidation as suggested by Bassler. In regard to the first explanation it may help us to consider the mode of production of the dark colored cystic bile the character of which is admitted by all observers.

Since the classical work of Kemp (20) on the absorption from the gallbladder mucosa, presented to the Royal Society, it has been well known that the latter entirely unlike the urinary bladder, absorbs fluids readily and rapidly. This, of course, tends to concentrate the bile and along with this concentration other changes, especially an alteration and deepening of the color, ensue. These changes are due in part, as Kemp has shown, to the admixture with the cystic bile of large quantities of mucus which undoubtedly produce important chemical modifications in the cystic bile. His conclusions are: First, that the mucus of the gallbladder is not merely a secretion destined to lubricate the interior of that organ and protect it from the irritation of its other contents, but is an essential integral portion of the cystic bile; second, that the gallbladder is not merely a reservoir for the bile, but an organ highly endowed with organic functions, and that the primary secretion of the liver is converted into cystic bile, mainly through the agency of its mucous membrane.

It is really difficult to understand how the well known characteristics of cystic bile could be duplicated elsewhere along the biliary tract, for instance, by a duct ectasia, which might conceivably constitute a bile receptacle of considerable dimensions in the absence of the gallbladder. The highly complex mucosa of the bladder with its trabeculated surface points to a function equally complex, and which could scarcely be assumed by a dilated duct.

It may, I think, be fairly assumed that the lining membrane of a duct ectasia could not duplicate the function of the gallbladder mucosa, either in the way of absorption of fluid or in the special secretion of mucus, although the bile might be darkened by long continued retention.

The second explanation presupposes a rapid increase in the quantity of pigment and bile salts secreted, giving rise to bile darker in color and higher in specific gravity. That such transition may occur seems established by the observation of Dunn and Connell in the complete absence of gallbladder, cystic and common duct. Such bile, it would seem, could only be produced by a somewhat gradual transition instead of the sudden change which is found in a large proportion of cases of apparently successful gallbladder drainage. Third, the assumption by Bassler of a *sudden* oxidation process which produces the transition from yellow to dark bile is, so far as I know, entirely unsupported by any known facts.

In the way of negative evidence as to the production of dark bile, in the absence of a functioning gallbladder, the twenty-two cases of Whipple, the ten or more cases of Lyon, referred to above, and one of my own, in all of which only light colored bile was obtained, certainly constitute strong proof that it is at the most a rare phenomenon.

Taking into account all the available evidence, together with my own observations, I have no hesitation in affirming that the dark colored B bile, obtained by the Meltzer-Lyon method, is usually obtained from the gallbladder. Some of my reasons for reaching this conclusion may be stated as follows: The suddenness of transition from A bile to B bile is best explained by the sudden emptying of the gallbladder receptacle into the current of bile flowing from the liver into the duodenum. This is, in most instances, instantaneous. When the bile is collected in a vertical tube during the transition, the line of demarkation is absolutely sharp and definite; no intermediate layer can be detected. On the other hand, if the transition is gradual, as observed by Einhorn, and as has been frequently observed in my own case, it does not disprove the gallbladder origin of the dark bile, as the gallbladder may slowly contract, slowly extruding its contents into the common duct, producing a gradual transition.

It has frequently happened in our experience that a typical A B C sequence will be obtained at one time, and at another time, only clear yellow A or C type obtained. It seems more reasonable to explain this by variability of the contractility of the gallbladder than by a failure of the magnesium sulphate to produce an effect upon the liver at one time which it fails to produce at another. The technic is identical and absorption and liver stimulation should be and probably are the same.

In a few cases in which we have repeatedly carried out this method tentatively for therapeutic purposes it has been commonly observed that with successive treatments the B bile becomes lighter in color, containing less and less formed pathological constituents, a phenomenon which can scarcely be explained otherwise than by assuming less and less static conditions in the gallbladder, which has presumably been partially or completely emptied by preceding treatments. These changes include diminishing numbers of leucocytes, fewer bacteria, and a diminution or disappearance of cholesterin crystals.

Microscopic study of stomach and duodenal contents and segregated A B and C bile specimens often furnishes proof, almost if not entirely conclusive, of the gallbladder origin of the B bile by revealing the existence in it of bacterial, cytological or crystalline forms not found elsewhere. As previously shown both the relaxation of oddi's sphincter and the contraction of the gallbladder musculature under stimulation by the Meltzer-Lyon procedure have been demonstrated.

In this connection it may be remarked that the failure to get B bile in some cases in which the sur-

geon can produce it by manual pressure may be explained by a poorly functioning gallbladder musculature or a manual pressure far in excess of the force of its physiological contractility; and the effect of air and anesthesia in surgical observations may inhibit the contractility of the gallbladder musculature. Admitting the difficulty and at times the impossibility of determining the precise portion of the biliary tract from which a segregated specimen of bile has been derived, what observations of clinical value can be made from the bile derived from the entire biliary tract or any part of it. As already indicated the gallbladder has been too much considered as a separate entity, instead of a highly specialized part of the biliary tract. The chemical and microscopical study of the bile from the entire tract must take into account the admixture of extraneous matter, which obviously can only be derived from the stomach or duodenum, and precaution should always be taken to avoid errors from these sources. The stomach can be reasonably well cleansed but cannot be sterilized, nor can its secretions be stopped during the observation, nor their admixture with duodenal contents be prevented when the latter are aspirated.

To minimize the error from admixture of gastric and duodenal contents the former should be carefully studied chemically and microscopically as the tube is passing through the stomach and the latter after it has entered the duodenum, each viscus then being thoroughly irrigated. In cases of hyperchlorhydria in which a large quantity of hydrochloric acid is being secreted and passed on into the duodenum, the bile undergoes a chemical change on coming into contact with it, which makes it turbid. This change must not be mistaken for pathological conditions. The chemical and microscopic study of the bile is undoubtedly of important clinical value. Microscopically no significance should be attached to an occasional leucocyte, epithelial cell, or cholesterin crystal, although the latter obviously can not occur except in static bile. Where these formed elements are present in excess and are not found, at least of the same type, in the stomach and duodenum, they assume a clinical importance which varies with their character and number. The bacterial contents of the bile should be studied by both cultures and freshly made smears, the latter being quite as important, since the number and morphology may be such as to demonstrate at once an important infection. The positive bacteriological identification can, of course, only be made by proper cultural methods, although the cytological and bacteriological content determined by the fresh smear will often go far toward settling the questions involved, and give quantitative information which a culture may fail to show.

The importance of the gallbladder and bile ducts as the site of a fecal infection can not be too strongly emphasized and I agree with Friedenwald (17) that a search for focal infection can not be considered complete without a study of the bile obtained by nonsurgical drainage of the biliary apparatus.

The clinical method of obtaining the biliary secretions for chemical and microscopical study is beset with difficulties which may be slight or insurmountable. In about five per cent. of the patients, we entirely failed to get the tube into the duodenum on the first trial. In some of them we subsequently succeeded. The time required varied from half an hour to three hours, and in a few extreme cases to several hours. We use the fluoroscope constantly to determine when the tube is in proper position. By revealing the curves which the tube makes, the fluoroscope constitutes the most positive demonstration of the location of the tube.

In approximately seventy per cent. of our observations a dark colored or B bile was obtained by either an abrupt or gradual transition. In the remaining thirty per cent. it rarely ever happened that the light yellow bile underwent no changes, excepting in those cases in which the gallbladder had been removed or there was good reason to suspect that it was not functioning because of obstructed ducts or other causes. As already stated, both the gradual transition and the slighter grades of darkening are probably due to a slow extrusion of bile from the gallbladder. With regard to the cases showing sudden transitions there is no reasonable doubt.

The conclusions already set forth, based largely on personal observations of patients and inspection of biliary secretions submitted to me by clinical assistants, have been confirmed to a most remarkable degree by the accurate work of Whipple, already referred to, in which every case, twenty-four in number, was checked by painstaking operative and bacteriological studies.

The clinical importance of infections of the biliary passages, leaving entirely out of sight the particular segment of the tract involved, can not be too strongly emphasized. Whipple's views on the value of these observations as a routine preoperative measure, have already been referred to. It seems, however, more than probable that there is in all cases a more or less prolonged presurgical stage, which if recognized, as it usually can be by these methods, gives the patient and clinician an opportunity to use all available means for preventing its further progress with the production of either a surgical condition in the gallbladder or widespread pathology in the liver. In regard to the latter, it seems quite probable, in the light of our present knowledge, that a large group of cases of hepatic cirrhosis may arise from infections of the biliary passages. Adami (21) is of the opinion that Laennec's cirrhosis is of an infective and not purely toxic nature, and favors the view that toxic agents, such as alcohol, are operative because of the depressed cell resistance due to low grade infection, possibly with members of the colon group, excessive numbers of which may find their way into the portal circulation in gastrointestinal disease. He also says that angiocholitis and biliary retention are among the causes of cirrhosis.

In view of the facts thus far established, and their wide clinical application, it would seem that these clinical methods in spite of their difficulties and cumbersomeness, are not only worth while, but supply information of the highest importance, which cannot be otherwise obtained. It is probably too soon to attempt to define precisely their limitations or possibilities, but it is not too much to say that their scientific application will lessen the incidence of gallbladder, bile duct and hepatic disease.

The references will appear in the author's reprints.

Weight Reduction and Its Remarkable Effect on High Blood Pressure

By ROBERT HUGH ROSE, B.A., M.D.,
New York,
Instructor in the New York Post-Graduate Medical School.

I have noticed a rapid fall in blood pressure during the process of weight reduction through dietetic adjustment. This has occurred almost uniformly and it is fair to conclude that weight reduction through regulation of diet is one of the chief therapeutic measures to be used in the treatment of high blood pressure. In fact, if Bright's disease, focal infections, and conditions in which other treatment is clearly indicated are excluded, diet and treatment of the intestinal tract seem almost certain to reduce the high blood pressure. Furthermore, it is not difficult to maintain the blood pressure at a lower point by normalizing the diet after it has been once reduced in this way.

Whether obesity is considered an entity or not, it is associated with many symptoms which are relieved as weight decreases. It matters little to the patient whether these are symptoms of obesity or of its complications. The most frequent symptoms are palpitation of the heart, dyspnea on exertion, pains in the knees, ankles, feet and other joints, difficult walking and impairment of activity. Arteriosclerosis, edema of the ankles, albuminuria, gout, myositis, neuritis, lordosis, flat feet, intestinal toxemia, vertigo, eczema intertrigo and hypothyroidism are complications.

Within the first forty-eight hours after a weight reduction diet has been started a marked relief is felt by the patient from the shortness of breath and palpitation of the heart. Walking becomes easier because of this relief to the heart and the breathing. It is not long before stiffness and painful joints begin to improve and they are frequently cured entirely.

An initial drop in the systolic blood pressure of twenty points in the first five to seven days is not unusual. It is easy to understand what this means to an embarrassed heart which has been working against a blood pressure fifty to a hundred points above normal. The edema rapidly disappears. The albumin in the urine likewise disappears when it is due to congestion of the kidneys. After the blood pressure has reached a point sufficiently low entirely to relieve the embarrassed heart, edema and albuminuria from congestion of the kidneys seem to be completely cured. When headache is due to high blood pressure or the resultant kidney congestion, it also yields to this treatment. Vertigo and fainting, which were present in two of the cases here reported, were cured. Intermittent pulse is another symptom which improves.

Gouty manifestations are greatly benefited by the low diet used for weight reduction unless the mistake is made of using too much meat and highly seasoned food. A weight reduction diet should be low in carbohydrates and fats. The amount of protein allowed should be moderate. The drinking of large quantities of water, thereby increasing elimination, is of great advantage while weight is being lost.

This is particularly necessary in the gouty cases. A recent popular book, of which several hundred thousand copies are said to have been sold, recommends an unbalanced, unscientific diet.

Whatever may be the causes of diabetes, overeating is certainly a factor. As a prophylactic measure against diabetes, dietetic restriction for weight reduction or for the prevention of weight increase in those inclined toward obesity is undoubtedly highly important. It is difficult to estimate its full value.

When sufficient weight has been lost, backache resulting from a compensatory forward convexity of the lumbar vertebræ in those of large abdominal girth is cured. The arches of the feet being relieved of the excessive weight which they are called upon to support, symptoms of flatfoot or weak foot are done away with.

Vertigo and fainting have disappeared during the treatment of these cases. In one or two it might have been due to the relief of an accompanying intestinal toxemia, because elimination by way of the intestinal tract was given considerable attention.

The following cases were taken from those which led to the conclusions which are presented in this article. Some of these patients had bad teeth or other focal infections and many suffered from intestinal toxemia, but the weight reduction diet was the treatment given to all and, I am convinced, caused the decrease in blood pressure. Other treatment used was according to indication in each case and varied considerably. I am sure that all will agree with me in the opinion that catharsis alone could not have been responsible for the uniform results here shown, nor could it have reduced blood pressure so many points.

Case I.—Mrs. J. C., first seen January 18, 1919. Symptoms: Severe headaches, shortness of breath, swelling of the ankles, and backache. Physical examination: Weight, 180.5 pounds; blood pressure, diastolic 110, systolic 204; urine, slight trace of albumin. Treatment: Weight reduction diet containing very small amount of meat, one thirtieth of a grain of strychnine, three times a day, and cathartics. January 25th, weight 178 pounds and 2 ounces, blood pressure, diastolic 100, systolic 178; February 8th, weight 177 pounds and 4 ounces, blood pressure, diastolic 92, systolic 170; February 15th, weight 177 pounds and 5 ounces, blood pressure, diastolic 92, systolic 170; March 1st, weight 168 pounds and 3 ounces, blood pressure, diastolic 98, systolic 158; March 22nd, weight 172 pounds, blood pressure, diastolic 92, systolic 162. During this time most of the symptoms disappeared, headaches, short-

ness of breath and albuminuria, although the patient was by no means cured, for there were complications not traceable to overeating, and an unfavorable family history. The teeth were in bad condition and the patient, feeling practically well, discontinued treatment and went to a dentist for pyorrhea. Almost two years later, in the early part of December, 1920, she returned with a small trace of albumin and headaches. The weight and blood pressure had remained down, weight 158 pounds, blood pressure, diastolic 98, systolic 165. Aftertreatment directed to increase of elimination through the intestinal tract, albumin and headaches disappeared and the patient maintained her improvement. Almost one year later, August 9, 1921, the patient came to the office. Examination of urine showed no albumin and the blood pressure was, diastolic 90, systolic 156.

Result.—Blood pressure dropped, diastolic ten points, systolic twenty-six points the first week. Two months later weight was eight pounds, blood pressure, diastolic eighteen points and systolic forty-two points lower. Two and one half years later, the diastolic blood pressure was down twenty points and the systolic was down forty-eight points; swelling of ankles, albuminuria, dyspnea, backache and headache were gone.

Case II.—Mrs. C. H. V., first visit April 13, 1917. Symptoms: Patient complained of rheumatism in back and knees, headache, swelling of ankles, palpitation and shortness of breath. Physical examination: Weight 240 pounds; blood pressure, systolic 190, pulse irregular, some swelling of the ankles. Treatment: The patient was placed on a weight reduction diet and seen from time to time during the following year; the weight gradually dropping until on October 22, 1917, it was 198 pounds and 10 ounces. The blood pressure was systolic 140. May 4, 1918, the weight was 190 pounds and 8 ounces, the blood pressure, diastolic 85, systolic 170. Much relief was obtained from rheumatic symptoms and activity in walking and getting about greatly increased. May 2, 1921, about four years since the first visit, the patient returned for further treatment, weight having risen to 197 pounds, which was, however, 43 pounds less than when first seen. The diet was resumed and on July 22nd the weight was 184 and a half pounds, the blood pressure, diastolic 84, systolic 154.

Result.—After four years weight is fifty-six pounds lower. Systolic blood pressure is thirty-six points lower than when first seen. The breathing is much easier. Backache, rheumatism and edema are gone. Walking has become possible.

Case III.—Mrs. J. L. S., first visit on March 15, 1920. Symptoms: Headaches, dizziness, fainting (has fainted several times on the street), backache, pain in the left hip, pain in the left lower quadrant of the abdomen, pain in right arm and elbow, shortness of breath on climbing stairs, disturbed sleep. Examination showed weight 201 pounds, blood pressure, diastolic 90, systolic 150. Heart negative, some pyorrhea, leucorrhea, tenderness over the sigmoid, x ray showed unrotated colon, cecum in the midline. Cecal stasis continued beyond forty-eight hours. Treatment consisted of weight reduction diet and irrigations of the colon in addition to advice as to having other conditions treated. The following is the subsequent history: March 29th: weight 193 pounds, blood pressure 134; patient slept better; pain in left lower quadrant relieved, pain in back less constant; pain in arm better, no fainting but still some dizziness. April 30th: weight 186 pounds and 8 ounces. May 20th: weight 180 pounds and 12 ounces, blood pressure, diastolic 88, systolic 120. Patient climbed stairs more readily, no dizziness, no fainting, all symptoms had about disappeared. Six months later, on November 24th, weight was 171 pounds, blood pressure 126. Patient said she was so well that she did not need a physician any longer. At the first visit patient said she had been treating for fifteen years without benefit but had been persuaded by her family to try once more.

Result.—In eight months' time weight was reduced thirty pounds, systolic blood pressure twenty-four points, and all symptoms were cured.

Case IV.—Mrs. A. D., first visit March 21, 1921. Symptoms: Dyspnea on exertion, headaches, palpitation, pain in the knees and elbows, numbness of arms and swelling of the ankles. The patient had increased in weight twelve pounds in a year. She was a heavy drinker of tea. Examination showed weight to be 172 pounds and 8 ounces, blood pressure, diastolic 104, systolic 170 pulse 96, marked tremor, goitre and scar where a part of the thyroid had been removed. March 26th: weight 169 pounds and 8 ounces, blood pressure 150, pulse 72. April 2nd: weight 168 pounds, blood pressure 140. April 11th: weight 166 pounds and 12 ounces, blood pressure 140. In the meantime the headaches, swelling of the ankles, shortness of breath, pain in the knees, and numbness of the arms had disappeared. The patient complained of heartburn. A test breakfast was given with the following results: free hydrochloric acid 40, total acidity 76. After the use of alkalies the heartburn ceased. May 2nd: all symptoms were relieved, weight was 168 pounds, blood pressure, diastolic 88, systolic 118.

Result.—There was a remarkable drop in blood pressure, systolic fifty-two points from 170, diastolic sixteen points from one hundred and four in forty days. This was in no way accompanied by any unfavorable symptoms, such as dizziness and weakness. In fact, the patient was improving in every way and feeling better all the time. The pulse fell from 96 to 72 in five days. Edema and dyspnea were cured during treatment.

Case V.—Mr. C. H. V. gave a history of frequent attacks of rheumatism, also had glaucoma, pain in the right eye and headache. Patient was unable to read except the largest print; family was told by oculists nothing could be done for his eyes. Pilocarpine drops were being used. Had an abscess near eye tooth on right side which he said did not trouble him, though it had discharged intermittently for years. At the time of the first visit in June, 1920, he was having an acute attack of rheumatism. Meat, butter, the latter being used excessively, were restricted in his dietary, colchicine and aspirin were given by mouth, and sodium carbonate enemata were given. This attack was quickly controlled. The abscess over the right eye tooth proved to be large, with thickwalled sac. Three days after its removal the pain in the eye and head disappeared and did not return. The general acuteness of vision im-

proved some and the tension of the eyeball was lessened. The blood pressure when first taken, July 26, 1920 (this being the date of the first visit to my office, after the acute attack of rheumatism was cured) was systolic 190. It dropped in ten months to 160, ranging between 154 and 170. At this time the diastolic blood pressure ranged between 106 and 110. Though the patient was not overweight, I put him on a daily diet of one quart of milk and all the fruit he desired to take. The blood pressure dropped to diastolic 98, systolic 156. I asked him to follow this diet one day a week thereafter. Less than a month later, on June 15, 1921, the blood pressure was 96/148. On August 24th it was 96/156. There had continued to be an improvement in the clearness of vision.

Result.—Patient on restricted diet for a number of months. Blood pressure dropped from 190 to 160, systolic, and diastolic was little changed. No attention was paid to the weight in this case. The patient was finally placed on a very low diet for effect on blood pressure and diastolic dropped ten points, systolic ten points more.

Case VI.—Miss B. M. K., first seen on April 22, 1916. Patient complained of shortness of breath, dizziness and fainting, and bad taste in the mouth in the morning. Physical examination showed slight tenderness in the right upper quadrant of the abdomen, weight 184 pounds and 15 ounces, blood pressure 150. X ray showed evidence of adhesions between the colon and gallbladder with stasis in the cecum and ileum. Treatment consisted of colonic irrigations, weight reduction diet, fels bovis and magnesia usta. Weight, April 29th, 182 pounds; May 27th, 172 pounds; June 23rd, 164 pounds and blood pressure 115. All fainting disappeared after the first week of treatment and dizziness by the end of a month.

Result.—Weight was reduced thirty pounds in three months and systolic blood pressure thirty-five points in two months.

Case VII.—Mrs. H. W. P., first seen July 25, 1916. At this time the weight was 180 pounds and 4 ounces. Blood pressure was diastolic 110, systolic 160. Before seeing the patient she had been taking intestinal irrigations which were not discontinued. In addition she was placed upon a weight reduction diet. On July 31st, weight was 178 pounds and 4 ounces, blood pressure, diastolic 95, systolic 145. On August 8th, weight was 174 pounds and 4 ounces, blood pressure, diastolic 85, systolic 130.

Result.—In two weeks the weight was reduced six pounds, the diastolic blood pressure twenty-five points and the systolic blood pressure thirty points.

Case VIII.—Mrs. E. M. S., first visit September 11, 1916. Patient complained of shortness of breath and some symptoms referable to the stomach. Examination showed, height five feet five and a half inches, weight 179 pounds. Blood pressure, diastolic 110, systolic 180. Pulse was intermittent. There was nothing of importance in the examination of the urine. September 15th, weight was 176 pounds and 8 ounces; September 30th, weight was 174 pounds and 6 ounces; October 7th, weight 172 pounds and 10 ounces; November 11th, 166 pounds and 8 ounces; December 5th, 165 pounds and 8 ounces; January 10th, 164 pounds and 12 ounces. On December 2nd the blood pressure was systolic 150.

Result.—In about three months' time the weight was reduced fifteen pounds and the blood pressure thirty points.

Case IX.—Mrs. R. L., first visit February 6, 1919. Patient complained of dizziness with frequent fainting, pain over the heart and dyspnea. Examination showed a blood pressure of 240. Unfortunately the weight was not taken at this visit but the diet which was chosen was a weight reduction diet and I have records of the loss of weight from March 12th to June 23d. The examination on March 12th disclosed that the blood pressure had dropped to 210, the weight was then 155 pounds and 8 ounces. On June 23d the weight was 145 pounds and 12 ounces and the systolic blood pressure 190.

Result.—In a little over four months' time more than ten pounds in weight was lost and the blood pressure was reduced fifty points. The patient's blood pressure had remained at 190 when she was seen six months later.

Case X.—Mrs. J. S. This patient had been under my care for a number of years, and in all this time she ran a high blood pressure and suffered from severe and persistent headaches. Her head was never comfortable. Previous treatment had given considerable relief but left much to be desired. On April 25, 1921, the blood pressure was diastolic 124, systolic 190; weight 142 pounds and 6 ounces. Patient was seen frequently and given injections of lutein for the relief of headaches and associated nervous symptoms. On May 12th the blood pressure was diastolic 114, systolic 164, weight 143 pounds and 12 ounces. The patient was placed upon a diet designed to reduce her slowly, though she was not much overweight, to ascertain whether this would further reduce her blood pressure. By June 6th her weight was 141 pounds and 8 ounces, her blood pressure, diastolic 114, systolic 144; June 27th weight was 140 pounds, blood pressure, diastolic 110, systolic 152; August 1st, weight was 138 pounds and 5 ounces, blood pressure, diastolic 110, systolic 154.

Result.—A persistent case which had yielded partially to treatment and had already obtained a drop in the blood pressure diastolic ten points and systolic twenty-six points, when the patient was placed upon a diet which caused a loss of only five pounds in two months, gave a still further loss in the blood pressure diastolic four points, systolic ten points. The patient felt so much better that she stopped coming to the office, otherwise I am convinced that the diet would have reduced the diastolic blood pressure ten or twenty points more.

CONCLUSIONS.

Weight reduction through dietetic adjustment causes improvement in several important symptoms either due to or associated with obesity.

1. One of the most uniformly noticed and the most important of these is the reduction of blood pressure. The amount of this reduction is much greater than could be obtained by the use of drugs.

2. Excepting Bright's disease, focal infection and incurable diseases, this method gives promise of

being a therapeutic measure which can be relied upon to reduce blood pressure.

3. Cases amenable to this method of treatment maintain the low blood pressure if the diet is normalized at the conclusion of the reduction.

4. There are some symptoms which seem to be dependent upon the increased blood pressure and which are relieved as the blood pressure falls. These are shortness of breath, palpitation, edema of the lower extremities, and albuminuria.

5. A drop of fifteen to twenty points in the systolic blood pressure during the first week of the treatment is quite common for those starting with a blood pressure around 200. A reduction of fifty points during the course of treatment is to be expected in such cases. These same patients starting with a diastolic blood pressure between 110 and 120 will generally conclude the treatment with a diastolic blood pressure between 90 and 100. For those whose blood pressure is not above systolic 150 at the beginning a drop to between 120 and 130 can be expected.

6. One of the worst forms of headache is due to high blood pressure. It is very successfully relieved during this method of treatment.

40 East Forty-first Street.

Gallstone Colic: Its Cause and Treatment

By HENRY HALPERT, M.D.,
Scranton, Pa.

The commonly accepted cause of gallstone formation is bacterial infection. The theory of this bacterial origin was first put forth by Bernard Naunyn (1) some thirty years ago, and although later studies and clinical observations have considerably modified his views, the present acceptance may be summed up by saying that gallstones are probably caused by a hematogenous streptococcal infection of the gallbladder and its ducts, this infection being accompanied by an altered cholesterin blood content. Naunyn himself concluded that cholesterin was not a specific secretion from the liver, but rather that the cholesterin which aided in gallstone formation had its origin in the epithelial cells of the walls of the gallbladder and ducts, which had degenerated and been thrown off as a result of the inflammation caused by the presence of the bacteria. This inflammation he called "lithogenous catarrh."

Thorkild Rovsing (2), who some years ago studied the etiology of gallstones very thoroughly, believes that the chief cause of biliary calculus formation is the concentration and inspissation of the bile during the course of fevers or of pregnancy. Under these conditions calcium salts and, later on, bile salts are precipitated, and thus a nucleus for the accumulation of cholesterin crystals is formed. Chemical analysis of the stones when in an early state of formation tends to support this view, and it is also confirmed by the large number of bile cultures which have proved to be sterile. Rovsing's idea is that the infection follows the formation of calculi instead of preceding it, probably being caused by the irritation from the stone acting as a foreign body.

More recently one of our own countrymen, Edwin Henes, Jr., of New York (3), has presented studies and clinical observations upon which he bases the assertion that gallstones are not dependent for their formation upon a primary infection of the gallbladder, for we see many cases of cholelithiasis in which the removed gallbladders show no evidence of the slightest amount of inflammation. It is, however, in his conclusions regarding the close relationship between pregnancy and gallstones, and between typhoid fever and cholelithiasis, that I am especially interested. "One of the characteristics of pregnancy is a progressive increase in the amount of cholesterol in the blood. At term a definite hypercholesterinemia is found and it persists for some time after the birth of the child. In typhoid fever, as soon as convalescence sets in, we note a decided rise above the normal in the cholesterol content of the blood. The influence of fever is marked, and always reduces the amount of cholesterol found in the blood. The higher the fever, the more marked is this influence."

To the general practitioner, the correct diagnosis of gallbladder lesions is by no means as easy as a hasty perusal of the textbooks would lead one to believe. When he is confronted with an acute attack of what he believes to be gallstone colic, it will be necessary for him to make a minute study of the patient's history and diathesis, with a careful consideration of all predisposing factors, before he can feel assured that he is following the right course in his management of the case.

The patients who suffer from gallstone colic may be divided into six classes, as follows:

1. Those in whom the presence of gallstones cannot be demonstrated, and who give no symptoms referable to the gallbladder.

2. Patients who present no symptoms other than chronic indigestion.

3. Those suffering from recurrent attacks of severe colicky pain, usually in the right hypochondrium, radiating upward and toward the back. The attacks are due to the presence of a stone in the cystic duct; when this is dislodged, the pain ceases and in the interval between attacks, the patient is perfectly well.

4. Those patients who suffer from recurrent acute attacks of colic, but unlike those of Class 3 are not free from symptoms during the intervals; having intermediate attacks of sudden digestive disturbance, sometimes almost as distressing as those caused by the impaction of the stones.

5. Patients who have recurrent acute colicky attacks, and in the intervals between suffer continuously from socalled dyspepsia and general discomfort in the alimentary tract.

6. Elderly individuals who do not have colic, but instead give a history of chills unaccompanied by fever. These chills represent the occurrence of colic in younger subjects.

With the exception of the last group all of these patients give us a history of severe pain, invariably coming on in the evening, or during the early part of the night. We have it on the authority of John F. Erdmann that in the case of a patient giving a history of going to bed perfectly well and being awakened before three in the morning with a terrific pain in the upper abdomen, a diagnosis of cholelithiasis can be made without an examination.

Leaving out the patients in Classes 1 and 2 in whom we can find no primary evidence locating the trouble in the biliary tract, the remaining patients are almost sure to give a history of what Erdmann terms "the prodromal stage of gallbladder disease." a sense of weight or of foreign body presence after eating, with attacks of discomfort following the ingestion of certain articles of diet. The cramp or colic which was the immediate cause of the consultation will be described as being located in the upper right quadrant, sometimes without extension, or again radiating to the lumbar region, beneath the scapula; sometimes even as far as the left shoulder and on both sides of the neck. If the stone is in the cystic duct, the colicky pain will be reported as extending upward across the midline under the left breast—constituting the socalled pseudoangina.

Ninety per cent. of these cases occur in women, and with many of them the first attack of pain occurs during pregnancy or following delivery. This selective period in life is explained—according to Erdmann (4)—by the increase of cholesterin in the blood at this time.

The immediate cause of gallstone colic is usually some indiscretion in eating. Many patients will complain that they are never able to eat certain foods —fatty food especially—without distress, but in most cases a specific article or a certain meal will be held responsible for the present attack. Fried or acid foods are especially prone to stir up trouble. The mechanism of the production of gallstone colic may be explained as follows:

We know that the secretion of the stomach is acid, while that of the duodenum is alkaline Cholecystitis and cholelithiasis, produced experimentally in dogs, have demonstrated an apparent increase in the amount of hydrochloric acid in the gastric secretion. Bile itself seems to have no influence whatever on the gastric secretions, but regurgitation of the duodenal contents with the bile of course lowers the acidity of the gastric contents because of the addition of the alkaline duodenal secretions. If, however, the duodenal secretion should become acid, it has been experimentally demonstrated that a spasm of the pylorus will result so that connection between the stomach and duodenum will be cut off, effectually blocking the passage of the stomach contents into the intestines. Similar observations have been made clinically. Therefore it appears that, following the ingestion of an unusually large meal or of a certain kind of food, the digestion of which requires more than ordinary activity on the part of the stomach, a large quantity of secretion is poured out by the gastric glands; and as a result an unusually large amount of acid passes through the pylorus into the duodenum. The alkali normally present in the duodenum may not, in this emergency, be sufficient to neutralize all the acid pouring in with the stomach content. It will be necessary to reinforce the alkaline strength of the duodenum by an overflow of bile from the gallbladder, the bile being also an alkaline substance, though not, as I have shown above, to the same degree as the duodenal fluid. This puts an added strain upon the gallbladder, and the greater the amount or indigestible character of the food taken into the stomach, the heavier will this additional burden fall upon the gallbladder. Therefore, given that that organ is already crippled by disease—inflammation, or the presence of stones even without active inflammation—we can easily understand the occurrence of colic after dietary indiscretions. Fried or acid foods by increasing gastric acidity will act in the same way.

This, I believe, is the true explanation of gallbladder colic, and it also explains why these patients always have their attacks during the evening or early part of the night. At these hours the stomach is naturally empty, and no food being on hand to absorb the acid gastric secretion it passes directly into the duodenum. The alkali in the duodenum being insufficient to neutralize this acid, the gallbladder will be called upon to reinforce the duodenal supply, and the revolt of the overworked gallbladder brings on the attack of colic.

Considering the appropriate treatment, in the light of this theory, we see at once that our efforts must be directed toward relief and reinforcement of the gallbladder. Diet is, of course, the first and greatest consideration. The food taken must be such as can be easily assimilated, and all fried or acid substances must be rigorously excluded. Tobacco and alcohol must always be abandoned. Small meals, taken at frequent intervals, four or even five times a day, will serve better than three larger ones. The patient must be prevented from becoming constipated, and the urine should be watched lest it become scanty and show an acid reaction. Drinking plenty of water and care observed that the skin excretes freely and actively at all times, are prime essentials in every case.

The medical attendant should aim to quiet the gallbladder, and lessen the peristalsis as much as possible. The administration of alkaline saline waters, and frequent small meals with plenty of green vegetables and fruit, will tend to increase the flow of bile. Plain drinking water alone, if taken frequently in considerable quantity, is of great help in keeping the bile thin, and preventing its stagnation. Alkalies in hot water both before and after meals should be taken regularly.

For the immediate relief of acute biliary colic opiates are usually necessary and absolute rest, with hot external applications, must be instituted. A hypodermic injection of morphine, with or without atropine, a suppository of opium and belladonna, or the latter with codeine, will be beneficial (5). Later such patients should receive a large dose of bicarbonate of soda, two to four teaspoonfuls, each night at bedtime. A little belladonna at the beginning of treatment will be of assistance in preventing spasm.

The references will appear in the author's reprints.

Dangers of Operations for Rectal Fistula

By CHARLES J. DRUECK, M.D.,
Chicago,
Professor of Rectal Diseases, Post-Graduate Medical School and Hospital.

DANGERS TO BE AVOIDED.

The sphincter may generally be cut once, especially in the median line, without danger of incontinence, but always divide as little as possible. Never divide the sphincter twice at the same operation or without informing the patient that some incontinence is sure to result. The condition of the patient's bowels, as regards the number and character of movements, must always be considered. A sphincter that acts admirably for one formed movement daily may be totally ineffectual in a case of periodical constipation and diarrhea. Division of the sphincter may cause some incontinence even in a robust man, and dilatation in a delicate woman may leave some permanent paralysis. In fistula cases the sphincters are weak at best and should not be incised or stretched any more than is absolutely necessary. The tendency to incontinence after division is found chiefly in horseshoe and rectolabial varieties, and those old cases where the whole anal region is riddled with openings, but it is in these same cases that the surgeon has an opportunity to demonstrate his resources and ingenuity.

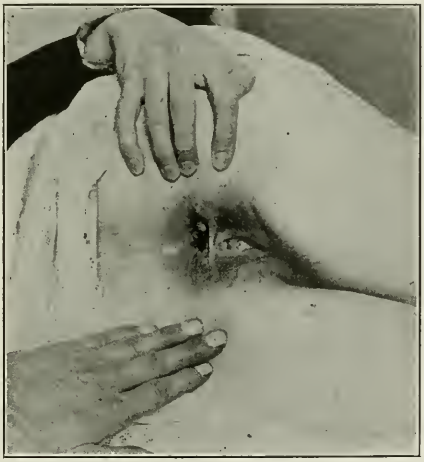

Fig. 1.—Relaxed anal outlet. The divided ends of the sphincter are shown by the pits in the skin on either side of the anus. Note the relaxed vaginal outlet although this woman had never been pregnant.

In all fistulæ that extend above the internal sphincter, that muscle usually must be divided with at least a temporary incontinence. A permanent paralysis results if the sphincter is cut several times. Where the tracts extend above the internal opening in the bowel the extensions must be treated as a diverticulum. Sometimes the operator, fearing hemorrhage, will incise only to the internal opening and trust to inflammatory adhesion of the branch. Such treatment is risky.

The branches running under the bowel are of two varieties. One kind extends along beneath the mucous membrane and does not bleed much when cut. The other runs deeper under the muscular coat and even into the perirectal tissues. In these there may be considerable hemorrhage. Many sinuses run under the skin from the bowel to the buttock or scrotum, and these may be laid open without interfering with the sphincters.

Where there are several fistulous tracts (in old cases) the patient's reparative powers are often weak, and it is better to do two small operations than to tax the recuperative power with one extensive one. If more than one internal opening is found they should be incised into a common tract. Diverticula should be dissected out and treated as the main tract, unless there is grave danger of incontinence resulting or of injuring the perineum in the case of women.

If the wound appears healthy but refuses to heal, and if there is no sinus to account for the sluggishness, turn your attention to the general system. If there is evidence of pus burrowing or the formation of a pocket, it should be immediately incised.

FECAL INCONTINENCE.

Fecal incontinence is perhaps the greatest calamity that can follow a rectal operation and one for which the operator is seldom forgiven by the patient. It may also result from injury to the lumbar spine, from disease within the rectum or from traumatic impairment of the contractile power of the sphincter. The loss of fecal control may be complete or only partial. In transverse myelitis it may be mistaken by the patient for diarrhea. A temporary incontinence is sometimes associated with the severe prostration of acute or chronic diseases, such as typhoid fever, cholera, pneumonia and tuberculosis. Incontinence in any of these conditions may be followed by impaction of the rectum because of the loss of tactile sensation of the rectum and the lessened secretion of mucus to lubricate the fecal mass. Incontinence of feces associated with incontinence of urine is a symptom of Jacksonian epilepsy.

The most frequent traumatic causes of incontinence of feces are operation for rectal fistula and hemorrhoids and rupture of the rectovaginal septum by childbirth. Tuttle says, "This condition has become a nightmare to the profession and a stumbling block to every layman suffering from fistula. It is the shibboleth of the charlatan by which he frightens the sufferer away from the regular surgeon and induces him to be content with palliative treatment rather than submit to an operation." Incontinence does not occur anything like as frequently as is generally supposed. It is quite unusual

to have more than temporary incontinence unless extensive burrowing or multiple fistulous openings exist. Incontinence may follow dilatation of the sphincter but only if there is some underlying spinal or nervous disease. Oblique, irregular or jagged incision of the sphincter, even though single, may result in such a vicious union of muscle ends that incontinence results. Transverse cutting of the sphincter is not likely to produce incontinence. The integrity of both sphincters is absolutely necessary for the voluntary control of the anus. If the muscle is cut squarely across and the ends united again so as not materially to increase the muscle length there will be good control, but if a wide band of scar intervenes between the severed sphincter ends the muscle will not sufficiently contract to thoroughly close the anus (Fig. 1). Oblique incision of the sphincter allows the divided ends to slide upon one another until the internal fibres of one end unites with only the external fibres of the other end and thus very much lengthens the muscle and is frequently followed by incontinence. When the sinus of a fistula passes through the body of the external sphincter muscle an incision severs only the lower fibres. These may be left to close by granulations. But if the entire muscle is divided and the wound edges retract there is always some incontinence. If the sphincter is cut more than once incontinence is almost sure to occur. Sometimes following childbirth the perineum is restored but the anal sphincter is not united and incontinence results.

From four to six weeks after the sphincter has been severed it retracts, though to a variable degree. Sometimes the muscle ends are still bound together and the tear only enlarges the circle slightly. In other instances, the ends are widely separated and the muscle which is thick and short makes but a shallow arc behind the anus, with a deep dimple in the skin of the posterior raphe behind the location of the muscle. A smooth glazed depression of the skin or sometimes puckered pits mark the location of the ends of the sphincter (Fig. 1). Thus the ability of the patient to retain feces is not an index of the depth of the rent in the muscle but rather of the extent of separation of the ends of the fibres. If the cicatrix binds the ends firmly together an efficient sphincter may still obtain. This approximation is what we hope to attain by a plastic operation in the less fortunate individuals who apply for help. The individual can usually retain formed feces satisfactorily, but as soon as the discharge is at all liquid incontinence occurs. The result is that the patient limits his diet and uses drugs to maintain a degree of constipation which soon interferes with proper alimentation. Intestinal gases also escape and the unpleasant odor forces him from society and he soon becomes melancholy, thus adding another chain of complaints. If the mucosa prolapses a rectal tenesmus appears. In many of these patients a nervous diarrhea develops, excited by the least rumbling of intestinal gases. The whole complex of symptoms tends to reduce the patient's physical well being.

30 North Michigan Avenue.

Some Points in the Diagnosis of Carcinoma of the Rectum

By ARTHUR A. LANDSMAN, M.D.,
New York,

Attending Rectal Surgeon, Jewish Memorial Hospital; Deputy Surgeon, Diseases of the Rectum, Out Patient Department, New York Hospital; Proctologist, Hebrew National Orphan Home.

There is no disease in which correct diagnosis is of greater importance than carcinoma of the rectum. This is not only because of the nature of the disease, but for the additional reason that the differential diagnosis in the cases in which it is of the greatest practical value lies frequently between two diseases, one of which is benign and ends in recovery, and the other malignant, often terminating fatally despite all that science and skill can do. These two conditions are again and again mistaken for each other, even by careful surgeons and internists, or a diagnosis of rectal cancer is made which comes too late to be of much value to the patient.

We believe this is not due so much to carelessness as to certain fallacies which have crept into the minds of physicians concerning cancer of the rectum. Many men assume that to sustain a diagnosis of rectal cancer, the patient must be of middle age or over, who presents a palpable tumor in the rectum, suffers from intractable constipation, sharp pain, and frequent bleeding. Moreover, he looks cachectic, and gives a history of a great loss of weight. It is true that such a group of symptoms may be present late in the disease, but nothing can be more misleading than the assumption that all of them must be in evidence in a suspected case to sustain such a diagnosis. Not only is this a mistaken idea but it is not uncommon to meet what appears on the surface to be the opposite of this picture. Numerous cases occur at thirty or before, in persons in whom no gross tumor can be made out, who are not constipated, suffer little or no pain, have lost no weight and show no outward sign of ill health. Moreover, there might have been no bleeding from the rectum up to the time of the examination, it might have been so slight as to escape notice, or it might occur in a person accustomed to occasional bleeding. In place of a sizeable tumor we may find an ulcer, and far from being constipated, the patient may complain of diarrhea. But from this we need not assume that there is no evidence at this time from which a presumptive diagnosis of rectal cancer can be made; careful examination will disclose symptoms which when properly interpreted are strongly suggestive

of the true diagnosis, especially as they are often supported by corroborative findings as we go along.

To enable one to obtain data for such an investigation it is necessary to analyze the findings as they are brought out in the a, history; b, physical examination, and c, laboratory examination.

HISTORY.

In taking the history we must eliminate irrelevant material and make straight for points which have real value when elicited. These are onset and duration of the disease and nature of the complaint, such as pain, altered bowel function, unsatisfactory stools, disturbances of gastric and intestinal function, pathological discharges, and other unusual symptoms which may require examination.

In considering onset and duration of the complaint, we know, of course, that sudden onset and short duration point toward innocent trouble in proportion as gradual beginning and chronic course are ear marks of a more serious disturbance. But what is more significant than this is the circumstance, that in innocent rectal trouble the patient is comparatively free from symptoms in the intervals between his attacks, while in malignancy there are no periods of remission. Trouble having once started the tendency is to progressive increase both in frequency and severity of the symptoms. To illustrate, the person bleeding from hemorrhoids may be perfectly comfortable for months at the time, until something occurs to excite a recurrence; but the patient who has rectal hemorrhages due to a carcinoma will not be free from symptoms at any time but must expect his distress to become more acute with the duration of his illness.

Pain.—It is generally stated that pain is not an essential sign of carcinoma of the rectum, but this depends largely upon the nature of the growth, its location and stage of the disease. Many rectal tumors grow slowly but there are some in which there is an early tendency to encroach upon the neighboring structures, and in these there are a variety of symptoms referable to the urinary function in males, marked subjective pelvic disturbances in both sexes, distressing bearing down pains, boring backaches, etc. A growth low down in the anal canal causes early and acute suffering, higher up the symptoms are less sharp, come on later, and are likely to be such as grow out of interference with passage of gas or stool, while midway (the widest part of the rectum) pain is negligible until late in the disease, when changes due to destruction of tissue will dominate the picture. Situated in the sigmoid, abdominal symptoms become more and more prominent and there are subjective and objective signs referable to the lower left side of the abdomen.

Altered bowel function.—Constipation and diarrhea, which are markedly persistent or progressive, are significant symptoms, the former not to the same extent as the latter, because constipation is relative and a common condition in many people who consider themselves otherwise well, while diarrhea is a definite change from the normal and always associated with some degree of ill health. On the other hand, constipation is an earlier symptom of malignancy, diarrhea being the result of conditions found only late in the disease.

Unsatisfactory stools.—This consists of a feeling following defecation, as though the bowel did not empty completely, forcing the patient to return to stool repeatedly. His centre receives a correct stimulus of something more remaining in the bowel, but he just naturally cannot dislodge it. This is a suggestive symptom but by no means pathognomonic, because it may be found in invagination of the sigmoid into the rectum, prolapse of the bowel, pedunculated polyp, and occasionally in large pendant hemorrhoids. Disturbances of gastric or intestinal functions, grouped under the name of indigestion, are like constipation a common symptom in many persons who have no organic disease, but when they occur coincidentally with the onset of rectal complaints they should be valued accordingly. Their presence in such cases favors a presumption of serious trouble as they are not an ordinary accompaniment of innocent rectal disease.

Pathological discharges.—There are a number of points in connection with this symptom which deserve consideration. In nonmalignant conditions, as, for example, hemorrhoids, bleeding occurs nearly always when there is an increase in intraabdominal pressure, as in attempts at stool, and rarely at other times; in carcinoma it may occur at stool for the same reason, but often independently, from the erosion of a bloodvessel. In some of our cases of carcinoma the first intimation the patients had of trouble was when they found their clothes saturated with blood on arising in the morning. There is a misapprehension about the significance of the kind of blood lost which may lead to erroneous conclusions. It is said to be clotted and dark in carcinoma and fluid and red in nonmalignant conditions which simulate it. This is not to be accepted without qualification, as the color does not depend upon the nature of the lesion, but the point from which the bleeding takes place and the length of time the blood has been retained. Hence, while it is true that bleeding from piles is generally bright red, we must remember that a similar condition may occur in carcinoma implanted low down.

PHYSICAL EXAMINATION.

This consists of: a, Direct examination of the parts by digital palpation and inspection; b, indirect examination through adjacent organs or areas, such as vaginal and abdominal examinations; c, laboratory findings, x ray and sections of tissue.

In direct examination the most valuable means of diagnosis is palpation with the finger accustomed to the feel of both normal and abnormal tissues and structures. We are fortunate if we can bring our fingers in contact with a suspected area for it discloses evidence not obtainable in any other way, and it enables us to feel practically the entire anatomical rectum by putting the patient in a suitable position. We repeat, that it is a mistake to suppose that to establish a diagnosis of carcinoma, it is essential to locate a tumor. Adenocarcinoma, the most common type of rectal cancer, may begin in what is to all intents and purposes an ordinary ulcer, which only later in the disease manifests characteristics of malignancy. Much has been said of the enlargement of the rectal and pelvic glands, but to us their rôle does not seem so important because changes in them

are made out only with difficulty and they are at best merely evidences of infection which give no clue to its nature.

Inspection may be accomplished by the use of any kind of a light to which one has become accustomed, but as a means of diagnosis it must always remain secondary to palpation; appearances are deceptive and objects which are totally different often bear a close resemblance to each other. As a method it is inferior to palpation because for one thing it is impossible to recognize by the eye alone physical characteristics which distinguish innocent from malignant conditions. Often, too, the free bleeding obscures clear vision and puts a further limit to the investigation.

Indirect examination is carried out in both sexes upon the abdomen, in females *per vagina*. Palpation of the abdominal wall discloses tumors, masses, tender points, enlargement of the viscera, etc., findings which are peculiar to malignancy rather than to simple rectal diseases. Pelvis examination *per vagina* is indispensable in such conditions because the suspected growth may be extrarectal and for the additional reason that there is an advantage in being able to palpate with two fingers in place of one, a method usually not applicable to rectal examinations except under anesthesia. The character of any suspected mass may be further checked up by introducing one finger into the rectum the other into the vagina.

LABORATORY EXAMINATION.

In the lesions of the rectum proper röntgenological examination is not essential, because given a suitable position the entire organ is within reach of the examining finger and may also be inspected by direct vision. But in a certain number of persons proper sigmoidoscopy is impossible, and in order to enable one to differentiate organic obstructions of the gut from spasm or adhesions competent x ray examination offers the only solution.

Section of a piece of suspected tissue is opposed by some on the well known ground that it may disseminate cancer cells into the blood or lymph circulation and spread the disease. It is really not needed in the diagnosis of cancer of the rectum except as confirmatory proof in the doubtful cases in which one cannot make up his mind from the clinical findings alone whether he is dealing with malignancy or not. In those the patient will have to take his chances on a biopsy in an attempt to confirm or refute the diagnosis in an effort to decide issues upon which his happiness depends so largely.

310 West Eighty-sixth Street.

Perforated Gastric and Duodenal Ulcer

By ANTHONY H. HARRIGAN, M.D.,
New York,
Visiting Surgeon, Fordham Hospital; Assistant Visiting Surgeon, St. Francis Hospital.

Perforation of a gastric or duodenal ulcer is one of the gravest emergencies in abdominal surgery. Peritonitis is the inevitable sequence, unless the condition is checked by operation. In general, the subject is not only of extreme importance to the surgeon, but one concerning which the last word has not been said. It is evident from a casual reading of the literature that the operative technic of repair of the ulcer varies widely.

To approach and decide the question from a study of statistics is of slight value on account of the common failure to note the social status of the patient, the type of hospital, public or private in which the patient was operated on, and chiefly, the omission to classify the patient according to the time or number of hours elapsing before operation was performed. In the main, statistical analyses prove that if an operation is performed early, the mortality decreases, a dictum so well accepted and believed that its demonstration is not necessary. Moreover, it is now futile, with the general acceptance of the wisdom of operation in all instances of perforated ulcer, to prove that surgery is the sole means of treatment.

I have operated on twenty-six patients suffering from either perforated gastric or duodenal ulcer. The question of perforation should be considered as a special topic because neither the general subject of ulcer has been sufficiently elucidated, nor has the operative treatment been well established. Indeed, the mechanism of perforation is still debatable.

The diagnosis is paramount. Care, discrimination and close questioning are essential in order to elicit a history of chronic ulcer. The value of a detailed and correct history is inestimable. If the patient has been studied by an internist or a gastroenterologist, in a detailed and exhaustive manner, where röntgen examination and gastric analysis have been made, and the diagnosis established the correlation of the acute symptoms with the original diagnosis is simple. If the internist is not at hand, the surgeon must question the patient concerning the existence of persistent or chronic gastric symptoms. It is difficult, as a rule, to obtain a classical history. Hunger pain, a characteristic symptom is important, if described. Hematemesis or melena are significant points in the history. Occasionally, none of these symptoms being present, the patient merely complains of vague dyspepsia. Again, as the symptoms of chronic gastric ulcer often recur with a peculiar periodicity, there may appear intervals of freedom from all symptoms. These free intervals are likely to mislead. Perforation in a patient who furnishes absolutely no previous history of gastric or duodenal ulcer is not unusual. Indeed, it is so distinctive, that I have come to believe that there exists a

type of ulcer peculiar in its tendency to perforation. The absence of pain during the evolution of an ulcer, especially, when the excavation is deepening toward the peritoneal cavity, is remarkable. Yet it is well known that an ulcerating pyloric carcinoma may, at a later stage, manifest no pain. If an ulcer extends outward toward the peritoneal coat it does not always follow that pain ensues. Of course, the patient often gives a detailed account of gastric or duodenal ulcer symptoms. In these instances the actual acute abdominal symptoms with the past history are easily correlated. But in most instances the patient is so seriously ill and depressed that a careful questioning for the variable symptoms of ulcer is difficult, if not impossible.

Perforation vividly calls the attention of the patient to a condition of extreme importance. If we assume that many untreated ulcers become carcinomatous, we might, with a certain stretch of the imagination, believe the perforation to have a beneficial import. But, the complications and dangers of perforation are too great.

The onset of perforation is sudden and ushered in with severe and agonizing abdominal pain. The pain may occur while the patient is walking or at work. The pain is so intense that he cries aloud. The face rapidly becomes pinched, anxious and covered with cold perspiration. The patient holds his hands to the abdomen for relief. Shock rapidly supervenes. The body is maintained as though held in a vise. The legs are flexed. The temperature is slightly elevated. The pulse rate is moderately accelerated and has a wiry and snappy quality. There may be nausea and sometimes immediate vomiting. Abdominal rigidity takes place at once and is extremely pronounced. The muscles are contracted to the utmost—boardlike. (It is possible that the extravasated acid secretion is a factor in inciting this intense rigidity.) Other symptoms are tenderness in the epigastrium accentuated at a spot an inch above and to the right of the umbilicus. Usually, slight dullness is found in the upper right quadrant immediately below the costal margin and dullness in the right flank. Tenderness over McBurney's point is extremely misleading. Obliteration of liver dullness, due to the presence of free air in the peritoneal cavity, is occasionally seen and of great diagnostic import.

Because the symptoms rapidly evolve, the foregoing description is the typical picture seen within the first few hours. Later, the classical symptoms of diffuse peritonitis develop and dominate. To summarize, one may say the cardinal symptoms are: the sudden onset, intense excruciating pain, extreme boardlike muscular rigidity, areas of tympany over the liver, or obliteration of liver dullness and an area of dullness on percussion, immediately below the right costal border.

The most common erroneous diagnosis is acute perforative appendicitis. Its exclusion is extremely important. At a late stage of the disease, when the symptoms are general and the local signs have vanished, the differential diagnosis is practically impossible. The initial symptoms of perforated ulcer are far more intense than those of appendiceal perforation. There is one cardinal differential point—the symptoms of perforation develop more rapidly than those of acute appendicitis. It is seldom in acute appendicitis, that general muscular rigidity develops before the end of twenty-four hours. In perforated ulcer rigidity is usually bilateral while in appendicitis rigidity is, at first, unilateral. Also, the degree of muscular rigidity differs widely. In perforated gastric or duodenal ulcer, it involves the entire abdominal musculature. In appendicitis, on the contrary, rigidity, save in the perforative type, is moderate, a tenseness—and, in the beginning, unilateral and localized. Admittedly, there are instances of appendicitis in which perforation occurs in less than twenty-four hours. Though these types of fulminant appendicitis must be considered, their rarity tends to neutralize the diagnostic error. Appendicitis, in the beginning, causes a local peritonitis; whereas, perforated ulcer produces a rapidly spreading peritonitis. Pain in appendicitis which appears primarily, as a rule, in the region of the umbilicus, generally radiates rapidly to the right lower quadrant. Tenderness becomes localized at a precise point. The diagnostic error is ascribable to the frequent occurrence of pain in the right lower quadrant in perforated gastric or duodenal ulcer, a symptom readily explained by the downward flow of the exudate and extravasation along the right dorsal gutter.

Dullness is an important differential point. Unfortunately, it does not always exist. There is, however, another extremely significant sign. I refer to an area of localized tympany over the liver in the parasternal line, between the superior and inferior borders of the liver. It is rarely larger in extent than the palm of one's hand, and is readily elicited by simple percussion. Having found this on numerous occasions, I believe that great reliance may be placed on it in the differential diagnosis. The mechanism of its production is not clear. At operation one usually finds a pool of fluid in the region of the pylorus, beneath the liver. It is possible that the free air escaping from this pool passes up to the dome of the diaphragm, where it is imprisoned by the falciform ligament of the liver. This sign is never found in acute appendicitis. A small area of dullness immediately below the right costal border speaks strongly for perforated gastric or duodenal ulcer.

Acute cholecystitis is a more patent diagnosis. Pain is intermittent and colicky in nature, eructations are frequent, the muscular rigidity is not so extreme and intestinal distention occurs rapidly and early. Pain radiates, as a rule, to the right scapula or shoulder. The distended gallbladder, lying under the costal border, may be felt on deep respiration. Bile pigment in the urine is significant. The occurrence of jaundice, or at least, an icteroid tint of the conjunctivæ is of corroborative value. The history of chronic indigestion or previous attacks is material.

PANCREATITIS.

Acute hemorrhagic pancreatitis mimics perforation closely. If the perforation is associated with general peritonitis, the differential diagnosis becomes extremely difficult. Both conditions have in common, severe epigastric pain, marked tenderness, sud-

den onset and intense peritoneal reaction. Pancreatitis, however, is characterized by extreme intestinal distention; whereas, in perforated ulcer, the abdomen is somewhat flat until the development of diffuse peritonitis. Obliteration of liver dullness does not occur in acute hemorrhagic pancreatitis. To summarize: In acute hemorrhagic pancreatitis, distention is greater, cyanosis of the face more distinctive and the temperature somewhat higher. Tenderness exists in the median line immediately above the umbilicus. The occurrence of boardlike rigidity is rare. Liver dullness remains intact.

INTESTINAL OBSTRUCTION.

Acute intestinal obstruction of the jejunum or upper ileum produces a clinical picture often difficult to diagnose and one obscure in its manner of expression. The initial shock is extreme. Boardlike rigidity at the onset is absent. There is no obliteration of liver dullness nor evidence of fluid in the flanks. The temperature is generally subnormal. Vomiting is a dominant symptom. In acute intestinal obstruction, fever is generally absent in the beginning. Rigidity is seldom present. Moreover, the history usually reports the nonpassage of flatus. Since acute intestinal obstruction is commonly erroneously diagnosed, it is well to remember that obstruction of the upper intestine is an unusual type. The common causes are gallstones or enterolith, impacted in the intestinal lumen, retroperitoneal hernia in the fossa of Treitz and strangulation by a band or Meckel's diverticulum. In the ultimate analysis, the symptoms of perforated ulcer simulate those of intestinal obstruction, the differential diagnosis lies between peritonitis and obstruction. The difficulty is more likely to arise when the perforation takes place slowly or when infection involves solely the central abdominal compartment. The latter possibility is favored by the tendency of the omentum to create adhesions. Peritonitis, slowly developing and remaining unrecognized, proves the elusive point in the diagnosis.

Acute intestinal obstruction as a sequel of appendicectomy is vividly suggested by the history of the previous operation. Obstruction is not so prone to produce rigidity as perforated ulcer. Yet, if the obstruction is caused by a band, attached to the parietal peritoneum, muscular rigidity of an extreme degree may occur, despite the absence of infection. This point is important in the differential diagnosis. An elevation of temperature and increased leucocyte count total and differential, are also valuable aids.

CARCINOMA.

Perforation of a carcinomatous ulcer is somewhat uncommon. I have operated on two instances. The symptoms are ushered in with great shock. Extreme prostration and excruciating pain confined to the epigastrium are characteristic. Rigidity is extreme. The diagnosis is, as a rule, evident. In my two personal cases I was able to make the correct preoperative diagnosis. Both patients were emaciated and cachectic. On the anterior surface of the chest and abdomen were seen small, red, raised papules, which are so often noted in the terminal stage of carcinoma. The treatment, naturally, is futile. Exploration discloses a large sized cancer with central destruction. It is impossible, technically, to close the opening since sutures cannot be securely introduced. Death is inevitable.

Embolism of the superior mesenteric artery or vein may produce symptoms resembling perforated ulcer. A perforated ulcer, coming to operation at a late stage, for example, at the end of the first or second day, presents, as a rule, all the symptoms of embolism, save the occurrence of melena. Since the patient is so seriously ill, a clear history cannot be obtained. The operation becomes exploratory in nature, with the diagnosis one mainly of probabilities.

DUODENAL OR GASTRIC ULCER.

Although from a practical viewpoint, it is somewhat futile to discriminate between the symptoms of perforation of duodenal and of gastric ulcer, there are several differential points at hand. They relate chiefly to the previous history. The actual physical signs and symptoms, evident at the time of operation are, as a rule, identical. The symptoms of perforation of duodenal ulcer may appear with startling suddenness. Many patients, particularly young men, previous to the onset of perforation, complain of no ulcer symptoms. In fact, it is common to obtain this negative history. It would seem reasonable to assume that there exists a distinctive type of ulcer—the perforative—which grants immunity from the usual symptoms. On the other hand, these ulcers, when closely examined at operation, are found to possess a margin, excessively indurated, which indicates indubitably, that the lesion has existed for some time. Yet, certain patients, if minutely questioned as to evidence of dyspepsia, will reveal facts which demonstrate that the ulcer has at some previous time, caused symptoms. But since stomach symptoms are common to so many conditions and possess a similarity, it is difficult, from a mere record of the subjective symptoms, to establish a diagnosis of duodenal ulcer. The essential point for the clinician to remember is that the symptoms may not be of sufficient moment or seriousness to cause the patient to seek the advice of a physician for their control or cure. This point is vital in the diagnosis of perforation. Hence, the preceding history is generally valueless in coming to a diagnostic conclusion.

An accurate diagnosis makes for speed in the operation, since the surgeon can proceed at once to attack the lesion, by planning the incision directly over the duodenum or stomach. If the incision is in the median line, considerable difficulty will be met in applying the sutures to the duodenum or pylorus. These structures are situated at times, at a considerable distance from the median line. Besides, through an incision directly over the duodenum gauze may be more effectively packed against the ulcer.

The surgeon in making his decision must preserve a judicial attitude, notwithstanding the need of haste. In order to diagnose and to decide the question of operation, he must carefully weigh the import of each diagnostic finding. The decision results from a nice balancing and estimation of apparently trifling points.

If a patient is operated on within a few hours after perforation, practically no exudate is found, especially if the perforation is small. Air is present in almost every instance. Indeed, the presence of air in the peritoneal cavity leads one to the belief that it, perhaps, is the cardinal element in the production of the concomitant shock and severe pain, for it is strange that a perforation, usually so small as hardly to admit the tip of one's finger, should produce shock so severe and pain so excruciating. The presence of air in the peritoneal cavity, undoubtedly, excites extreme rigidity. Diffusing rapidly throughout the entire peritoneal cavity and acting, most likely, as a foreign body or element, it incites the abdominal muscles to contraction in the same manner as pus or blood. The rigidity involves the entire abdominal musculature, shock is evidenced by cold extremities, feeble pulse and subnormal temperature. Though this theory, of the origin of shock in perforation of a duodenal ulcer is entirely conjectural, it is evident that the condition may, with some warrant, be ascribed to air, because in patients operated upon by me, but a few hours following perforation, no appreciable peritonitis or exudate was discovered, though rigidity, pain and the signs of shock were distinctly noted. In these instances, air was present in the peritoneal cavity, as evidenced by its sudden escape upon division of the pariteal peritoneum.

These patients are prone to do badly under narcosis. The anesthetist, as a rule, experiences considerable difficulty. The face becomes cyanotic and the respiration labored. This is likely to persist throughout the operation despite the care and skill of the anesthetist. A possible explanation lies in the extreme contraction of the abdominal muscles, combined with an undue elevation of the diaphragm, from air in the peritoneal cavity.

An ulcer, situated along the lesser curvature or on the posterior surface, may perforate into the lesser sac. The extravasated fluid in the lesser sac, upon reaching a certain pressure, tends to enter the greater peritoneal cavity, through the foramen of Winslow. Hence, the ultimate result is the same though the perforation took place on the anterior wall of the pylorus or duodenum. But, the foramen of Winslow, from previous inflammation, may be closed. Under these circumstances the fluid, collecting in the lesser sac, forms an extremely tense swelling. The symptoms are somewhat different from those of an ulcer rupturing into the general peritoneal cavity.

The onset of perforation of an ulcer of the posterior wall of the stomach is characterized by the occurrence of excruciating pain in the back. The intensity of the pain is ascribed to the involvement and distention of the lesser omental sac. In my personal cases, this characteristic pain was not present. Indeed, the slow leakage from a perforated ulcer in this region is prone to lead to the formation of a subphrenic abscess. The great danger is the difficulty to make an accurate diagnosis during operation. Despite the signs of peritonitis and its characteristic exudate, the perforation in the stomach is difficult to find. In addition, to division of the gastrohepatic omentum and direct inspection of the posterior wall, there is another simple method serviceable to find the ulcer. The index finger of the exploring hand gently palpates the anterior wall of the stomach until a distinct depression is found in the posterior wall, into which the anterior wall can be invaginated. Also, the presence of enlarged lymphatics along the lesser curvature may point toward the actual site of the perforation. When the ulcer is found, the gastrohepatic omentum is rapidly torn with the finger and the posterior wall of the stomach carefully examined. It is possible, when the ulcer is situated close to the lesser curvature, to evert the posterior wall so that the perforation may be securely sutured. If the ulcer is situated close to the greater curvature the opening should be made in the gastrocolic omentum. In either instance liberal drainage should be provided.

Perforation of an ulcer on the anterior wall of the cardiac part of the stomach is rare. The symptoms, in such a case develop and differ greatly from the usual pyloric or duodenal ulcer. One should recall that this part of the stomach, especially the area close to the lesser curvature, lying high up in the abdomen, under the left costal arch, is sheltered by the left lobe of the liver. If the point of perforation is small, the leakage is gradual, slow and trickling in nature, the liver contracts adhesions to the parietal peritoneum and anterior wall of the stomach. The round ligament of the liver becomes infiltrated and swollen. A distinct abscess cavity is thus formed. This represents, of course, the initial mechanism in the formation of a subphrenic abscess. Occasionally, the fluid gains access to the general peritoneal cavity. The symptomatology, in the beginning, is that of perforated ulcer; but, after encapsulation and subsidence of the peritonitis, the condition is likely to mislead and cause delay, though, of course, immediate operation is imperative. One should consider this type of lesion, particularly in operating for peritonitis of unknown origin. In order to expose clearly the site of perforation, the incision should be extended upward, in the median line, to a point where the major part of the stomach can be inspected. The region under the left costal border is not ordinarily easy of access, especially if a right rectus incision has been employed. The presence of considerable fluid in this region is significant. A large amount of the extravasated fluid flows upward and backward toward the subdiaphragmatic space. The surgeon notes, studding the stomach in the region of the ulcer, numerous placques of greenish white fibrin. One is able, with the examining finger to feel the crater-like depression of the ulcer. The actual hole may be covered with a tab of mucous membrane. If still in doubt, one has merely to grasp the stomach and listen to the hissing sound of the escaping air. An illustrative case is the following.

Case.—P. M., male, aged forty-one, married. Admitted to the Rockaway Beach Hospital July 22, 1919; discharged September 8, 1919. The family history was negative. The past history showed that the patient had taken six glasses of beer a day, tobacco moderately. He had had gonorrhea eighteen years ago, typhoid fever and pneumonia twenty-two years ago. The present illness began seven weeks before when the patient noticed distress and discomfort an hour after eating. Pain also was experienced

in the epigastric region, sharp in character, did not radiate, relieved by vomiting and increased by taking food. There had been severe eructations. The day before admission to the hospital the patient was seized with severe abdominal pain while stooping over his automobile. The pain had been confined to the epigastrium and radiated to the left shoulder. Complete collapse followed. The patient was brought to hospital in an ambulance.

The physical examination showed an adult male, white, who appeared seriously ill. Eyes and ears normal; tongue coated; apex of the heart in the fifth intercostal space three inches from the middle line; no murmurs heard. Abdominal examination disclosed extreme tenderness in epigastrium with extreme rigidity of both recti. The muscles, joints and lymph nodes were negative.

Operation, July 23, 1919; median incision. A large amount of purulent fluid, but odorless, was found in the peritoneal cavity. The appendix was small and not especially inflamed or diseased. The incision was lengthened upward in the region of the left lobe of the liver. A large amount of fluid was present, the cavity being formed by the parietal peritoneum to the liver and the round ligament. The stomach when discovered was covered with numerous large greenish white flakes of fibrin. On the anterior wall of the cardiac end of the stomach, about midway between the lesser and greater curvature, was a perforation. Its margin was hard and in the centre could be felt a small opening through which air escaped freely. The perforation was infolded with four interrupted linen sutures. A piece of omentum derived from the lesser curvature was placed over this suture. A large amount of gauze packing was disposed in a circular manner along the ulcer. One drain passed upward over the liver to the subphrenic space. Suprapubic split rubber tube was inserted through a stab wound just above the pubes. The patient made a complete recovery. He was discharged September 8, 1919, with a solidly healed incision.

A median epigastric incision is best, if the diagnosis is clearly established. The incision may be modified by placing it an inch to the right of the median line. The anterior sheath of the right rectus muscle is divided at this point and the muscle retracted outward. If the diagnosis is undetermined, make the incision through the fibres of the upper right rectus muscle. This permits the gallbladder and the appendix to be studied. An upper right rectus incision is also serviceable when the diagnosis is exact and definite.

The division of the peritoneum is generally accompanied with the sound of escaping air. Frequently as the exudate, intermixed with air bubbles, flows over the margin of the wound, a distinctive gurgling sound is heard. The exudate appears as a milky white or slate colored fluid, mixed with the food particles present in the stomach or duodenum at the time of perforation. At an early stage, no fecal or putrifactive odor is detected. The exudate differs notably from that seen in peritonitis caused by appendicitis or perforation of the lower ileum.

When the patient is operated on at an early stage one fails to find distention of the intestines. This, perhaps, is owing to the fact that a certain interval of time is needed for the development of peritonitis. Furthermore, the air in the peritoneal cavity may act as a compressing agent. One usually notes when dividing the peritoneum the escape of air. It produces a slight whistling sound. This is indubitable evidence of intestinal perforation. At a late operation a large amount of fluid is usually found. This fluid is characteristic, being odorless, and is in marked contradistinction to the peritoneal fluid found in perforation of the ileum or appendix. It contains food particles, particularly, if the patient has eaten a short time before perforation. The fluid passes at first to the subhepatic space and then downward in the right dorsal gutter, external to the ascending colon, to reach the right iliac region. From this point the fluid passes rapidly to the pelvic cavity. One occasionally hears in the region of the perforated ulcer, a gurgling or bubbling, due to the intermittent escape of air or fluid from the stomach or duodenum. On account of large flakes of fibrin in the region of the perforation the ulcer is often difficult to see. Under these circumstances the perforation is easily found with the tip of the index finger. Caution must be observed here in order not to dilate unduly and enlarge the perforation. The ulcer is also recognized by its indurated margin.

The pylorus may be covered with delicate white, stringy adhesions. The ulcer may be seen as a stellate scar. On palpation, a definite scar induration with the feel of a marble is noted. Grasping the stomach with gauze sponges the pylorus is rapidly brought into view. The perforation which can then be seen, generally, is delivered into the wound for suturing. In a late case with diffuse peritonitis, the exudate forming a pool or puddle, completely obscures the anatomy and prevents a clear view of the perforation.

The ulcer though found anywhere in the stomach, is usually prepyloric, pyloric or situated along the lesser curvature. It may be impossible to discriminate between a pyloric and a duodenal ulcer. As a rule, the position of the pyloric veins suffice to determine the beginning of the duodenum.

At operation, it is difficult to decide definitely whether the ulcer is pyloric or duodenal. By experience gained from operating in chronic ulcer cases, it has been determined that the ratio, three duodenal to one gastric ulcer maintains. The majority of duodenal ulcers are situated in the first three quarters to one and a half inches of the duodenum. A few occasionally are found in the second part, though the records on this point are not accurate, since there is no definite line of division between the first and the second portions of the duodenum. The pyloric veins generally indicate the line of division between the pylorus and the first part of the duodenum. This point is unavailing during an operation on account of the exudate and the intestinal distention which prevent the demonstration of the veins.

When the perforation is found suture is attempted. But, at times, the gurgling of gas, the flooding of the field with gastric contents and the rapid and constant movement of the stomach, or embarrassed respiratory movements, render this step best. Pursestring or interrupted sutures may be

difficult if not impossible. Linen or silk sutures are used. Two rows are preferable. When suture is technically impossible on account of too large an opening or friable tissues, a tamponade should be used by packing an abundance of plain sterile gauze against the ulcer. In order to prevent the tearing out of the sutures the needle should pick up the duodenum or the stomach at a distance from the site of actual perforation. It would appear that the tissue immediately surrounding the ulcer is, at times, inflamed and necrotic. One must not forget to employ tabs or flaps of omentum to cover the ulcer.

Always employ drainage. Insert directly to the point of perforation a split rubber tube drain or cigarette drain and surround it with a liberal disposal of plain gauze packing. This technic is followed provided the ulcer can be securely sutured. If the ulcer cannot be closed properly, employ a large amount of gauze packing, placed circumferentially around the perforated ulcer and eliminate the use of the cigarette or split rubber tube drain. If an extensive diffuse peritonitis is present insert one drain, generally a cigarette or split rubber tube, to the socalled space of Morrison. And in instances of pronounced purulent peritonitis always utilize suprapubic drainage.

The technic for the performance of this is as follows: The index finger of the left hand is pressed firmly against the abdominal wall at a point immediately above the pubic arch. With a scalpel held in the right hand, an incision is made in the linea alba about two inches above the superior border of the pubes. The left rectus sheath is incised and the muscle fibres split with the handle of the knife. At this point the index finger of the hand within the abdomen exerts increasing pressure against the upper angle of the incision. A sharp pointed hemostat is pushed upward, inward and backward against the internal index finger. By following this technic accidental rupture of the bladder is avoided. The opening in the peritoneum, made by the hemostat, is torn or enlarged by the fingers. In all instances of purulent peritonitis the opening of the peritoneum at this site permits a generous escape of fluid. A split rubber tube drain is then passed downward into the cul de sac, the inferior extremity of the drain resting on the bottom of the pelvic peritoneal pouch. One suture, preferably of silk worm, passing through the skin margins and rectus sheath and piercing incidentally the drainage tube, prevents dislodgment of the tube and checks the slight hemorrhage. Of course, the drainage is profuse and necessitates the changing of the outer dressings at least once a day. On the fifth day the suprapubic drain is removed and the mouth of the drainage opening kept patent by inserting a small piece of gauze packing. Remove the upper drains at the site of the ulcer on the fifth day. In the case of gauze packing, this should be removed gradually, at least four inches being withdrawn each day.

The question of performing gastrojejunostomy for acute perforated ulcer has been discussed at great length by many writers. Despite the prolonged debate which has centred around this question, no dogmatic statement can as yet be made.

The chief arguments in favor of immediate gastrojejunostomy for perforated ulcer are that it permits immediate feeding and the early administration of fluid, affords drainage to the stomach and relieves the tension within the stomach.

In debating the usefulness of gastrojejunostomy in the treatment of acute perforations, the question becomes narrowed, of course, to pyloric, prepyloric and duodenal ulcers, since it is universally admitted that the operation is best adapted and most serviceable in these distinctive types of ulcer. Ulcer, situated elsewhere in the stomach, is best treated by resection, excision or cauterization. In passing it is interesting to note that among French surgeons it is not uncommon to employ in perforated ulcer, so formidable a procedure as excision.

Of course, there is no question as to the value and benefit ascribable to gastrojejunostomy in chronic pyloric or duodenal ulcer. While the operation is not a panacea, the ultimate results are excellent and often curative. Though it is worthy of note that perforation has taken place despite the previous performance of gastrojejunostomy.

Considerable dispute has centred round the question whether the ultimate results in perforated ulcer are better with or without gastrojejunostomy. In the past the question has always been approached by the method of statistical analysis. The question should be approached from a physiological and pathological viewpoint. Surgical deaths without autopsy are of slight value in basing decisions. In general, it would appear that the weight of opinion is that the ultimate results are better with the employment of gastrojejunostomy. Of course, the entire question is exceedingly difficult to decide, since pathological variations are so great in individual instances. If each ulcer were of the same size, duration and extent, to employ the method of statistical comparison would have greater scientific support.

In certain perforations, owing perhaps to the enfeebled or cachetic state of the patient and his diminished reparative powers, the protecting adhesions which ordinarily develop in the region of the ulcer and which are stimulated by the gauze packing, are imperfectly formed so that the opening in the stomach reopens and communicates with the exterior of the wound. The resulting gastric fistula is an extremely serious complication. The contents of the stomach flow constantly over the wound and the irritating secretions excoriate and inflame the skin. In addition there is a great loss in nutriment owing to the escape of a large part of the ingested food and fluid. In the case of a duodenal fistula, a remedy is at hand in the temporary ligation of the pylorus, supplemented by posterior gastrojejunostomy to establish the continuity of the intestinal tract.

The foregoing is an epitome of definite notes and records of impressions written immediately following operations when the actual details were vivid and fresh in the mind. Hence, it is an abridgment of personal views based on observations demonstrable at operation. Admitting that these facts may be nothing more or less than repetition of somewhat trite clinical beliefs they represent, nevertheless, a precise program for the practical treatment of perforated gastric and duodenal ulcer.

328 West Eighty-third Street.

The Operating Room*

By JOHN F. X. JONES, M. D.,
Philadelphia,
Instructor in Surgery at Jefferson Medical College, and Surgeon to St. Joseph's, The Misericordia and St. Agnes's Hospitals.

(*Concluded from page 606*)

"The approximate size and weight of bacterial dust particles have been ascertained by different observations and experiments. If, for example, in quiet air (air of a room) dust, containing bacteria, be stirred up; in the beginning there are great quantities of bacteria in the air; soon afterwards—say thirty minutes—because of the settling of the dust most of the bacteria have disappeared from the air and there remains practically nothing but spores of mould fungus. Air currents of a speed up to two tenths mm. cannot maintain in suspension or carry away the heavier bacterial dust particles; the lightest bacterial dust, from clothing and from pocket handkerchiefs (never from the floor) can be held in suspension and carried away horizontally by air currents of from 0.2 to 2 mm. speed" (35).

Until 1897 atmospheric infection was supposed to be due almost exclusively to bacteria carried by particles of dust. In 1897 Flügge (36) called attention to the possibility of microorganisms being carried in droplets and bubbles. Flügge (36) and his associates, with bacillus prodigiosus in their mouths, spoke loudly, sneezed and coughed in a room where agar plates had been exposed. They thus proved that by such acts droplets or minute particles of mucus are ejected from the respiratory tract into the air. They further showed that these minute particles are driven by the ordinary air currents of the average room to all levels and to various distances. Among other things Flügge (36) says: "Wound infection requires a special discussion—particularly the peril of infection from droplets of excretion which are sprayed into the air and which threaten the asepsis of operations. In spite of every precaution, in recent years operators have been obliged to record inexplicable cases of suppuration and sepsis. The cause of these disagreeable results does not admit of ready explanation. We have blamed insufficient disinfection of the hands and have sought to improve this without wholly satisfactory results. We also thought of the air which in the original Lister process was considered almost as important as the contacts. But, then, we only considered the dry germ laden particles of dust in the air and from these only did we fear eventual infection. With this idea in mind we sought principally to minimize the transportation of dust to the air of the operating room; we made those having business there wear sterilized gowns and overshoes; we moistened the floor, etc. Moreover, the content of dry, germ laden, dust particles in the air of operating rooms has been determined several times with contradictory results."

Flügge then says that the occurrence of wound infection from the dust particles of the air is very limited and states his reasons for so believing. "It is much more apposite," continues Flügge (36), "to consider air infection of operating wounds as arising from drops of secretion ejected from mouth and nose by those present, in the act of speaking, coughing or sneezing. In the saliva of the healthy we frequently find Staphylococcus pyogenes aureus; occasionally Diplococcus lanceolatus. When there are the most trivial pathological changes in the mucous membrane of the throat we find masses of streptococci. Carious teeth constitute a mine for all possible more or less suspicious bacteria. Here we are confronted with pathological varieties which are always dangerous; they are not debilitated by drying, but, as many animal experiments have shown, they are often of the greatest virulence. The operator, the assisting personnel or the spectators may be responsible for the dissemination of these droplets. The more people who are present the louder the talking, the greater the percentage of colds and coughs on hand—the greater the danger. It is of little use to keep the spectators some distance from the operating table. The weakest currents of air can carry most of the disseminated droplets a distance of several meters to be deposited finally upon the field of operation or upon the instruments which are usually exposed. The patient, himself, is a source of danger not to be overlooked. With the irregular and often jerky respirations characteristic of chloroform anesthesia he can disseminate droplets of his own saliva and thus infect the operative field. Wetting the operating room floor so violently as to raise spray is more dangerous eventually than dry dust. I do not doubt most wound infections originate from contact, which, more than air, has quite properly received the surgeon's greatest consideration in the past. We need not, however, ignore entirely the danger to operative wounds which exists in excretion droplets. These are scattered in the air, where, hovering lightly, they may be carried far. It is possible that many irregularities in the course of the most efficiently protected operative wounds are to be traced to this hitherto disregarded means of infection" (36).

In addition to Flügge, many others have from time to time conducted experiments in order to determine both the quality and quantity of atmospheric microorganisms, as well as their relation to wound infection. Schimmelbusch (33) found by numerous tests in von Bergmann's clinic that, "with the auditorium occupied, the number of bacteria which settled upon the surface of a wound a square decimetre in extent, in the course of a half hour, is about sixty to seventy."

Gordon (37) confirmed Flügge's experiments with Bacillus prodigiosus and also, by means of his streptococcus test, succeeded "in proving the spread of the particulate matter from the mouth through the

*Read before the Lancaster City and County Medical Society, October 12, 1921.

air of the room to the same extent and distance as in previous experiments carried out with Bacillus prodigiosus." When the same author examined the air of the House of Commons, he frequently encountered an air streptococcus, "and found that it was the most frequent streptococcus in air directly contaminated by material brought in from the streets by members upon their boots." Gordon continues: "Working on similar lines to those adopted when developing the bacterial test for particles of saliva, I have shown that a certain staphylococcus, possessed of constant and definite characters whereby it can be identified, is uniformly and abundantly present in particles detached from the human skin or scalp, and that this microorganism serves as an index whereby the presence of such material can be identified. The skin staphylococcus in question grows well anaerobically, and is best detected in air by exposing broth and then incubating it anaerobically at 37° C. This microorganism, which is identical with Staphylococcus epidermidis albus of Welch, differs from Staphyloccus pyogenes albus in a number of points, notably by reason of the fact that it fails to decompose mannite with an acid reaction, whereas Staphylococcus pyogenes albus rapidly decomposes alcohol with a strong acid reaction."

Dudgeon and Sargent (38) having exposed a large Petri dish as near as possible to each of a series of operative cases, as long as the wound remained open, found in most instances large numbers of colonies consisting chiefly of various sarcinæ and moulds. Occasionally, only, did they find a Staphylococcus albus, which would seem to dispose conclusively of the argument that the Staphylococcus albus encountered in such experiments comes from the air.

In 1904 Petri plates were exposed for different periods of the day in the amphitheatre of the Boston City Hospital and Monks (39) quotes the bacteriological findings which are practically the same as those of previous investigators: 1, at no time during the twenty-four hours was the air free from organisms; 2, more bacteria were found when the air had been stirred up; 3, the vast majority of organisms found were harmless saprophytes, though in some plates of every series Staphylococcus albus and aureus were found—streptococcus, in two instances only; 4, no great difference in the number of colonies obtained at different levels, excepting on those plates laid upon the floor.

Ten years later, in 1914, J. and R. Villette (40) conducted three kinds of bacteriological researches on the air of operating rooms: A, Petri dishes were exposed for thirty minutes, the extent of the media being equal to the wound area; B, count of colonies; C, development of the cultures, and massive inoculation. They examined the air of operating rooms in their own hospital and then such rooms in private houses as might be chosen for an operation. In kitchens or bedrooms with carpets, or sanded in poorer homes, from nine hundred to two hundred colonies were developed. In bedrooms with bare floors or bath rooms, from one hundred to twenty colonies. In operating rooms they found three to no colonies. In their own aseptic operating room they found no growth. Cocci taking the gram stain were the only microorganisms found. They discovered neither bacilli nor streptococci. The cocci encountered grew rapidly on potato, bouillon, gelatin bouillon, and milk. The Villettes heated the cultures to 105° for forty-eight hours and then injected ten c. c. into rabbits without any result. They conclude that although it is not prudent to operate in bedrooms or in kitchens, it seems that contamination from the air need not be taken into consideration as a factor in operative infection.

It has been known for several years that expired air is free from germs and that there is no danger from the ordinary breathing of the spectators. Masks are worn, as a rule, to prevent droplet infection. I believe, however, that, if a mask causes great concentration of moisture in the neighborhood of a surgeon's mouth and chin, he will be less dangerous to the operative field with his mouth uncovered and closed. If he is obliged to teach, let him talk away from the wound. Jordan (41) has summed up the question of air infection in a few words: "The fact that minute droplets of moisture or mucus may be discharged into the air by coughing, sneezing, and talking, and may then float about for some time in the neighborhood of the person discharging them, seems to be the most significant result of air examination."

What then shall we do with students, visiting physicians and other spectators? Sargent (8) says: "Theoretically, those not directly engaged should either be provided with complete outfits of overalls, caps, veils, and boot coverings, or they should be separated by a glass screen from the main body of the theatre." Practically, this difficulty is being solved, in a measure only, by demonstrating operative surgery to small classes in small operating rooms where the few spectators present can be properly clad and carefully inspected. In some hospitals, the large amphitheatres are reserved for the teaching of surgical diagnosis. Rose and Carless (42), writing of *The Operating Theatre or Room,* say: "The arrangement of this necessarily depends upon considerations of space and finance. It should not be unnecessarily large, and the old fashioned theatre with tiers of seats overlooking the central area is not desirable."

The operating room itself should be simple in construction. There should be no recesses, corners or ornaments. Floor, ceiling and walls should be fashioned so as to stand the copious use of water. According to Rose and Carless (42), "The walls should be free from ledges on which dust may accumulate, and lined with white tiles or glazed bricks or, better still, present a smooth surface painted with white enamel, which can be washed down with a hose; of course all corners should be rounded. The floors must be impermeable, and slope towards an open channel on one side of the theatre, so as to allow of suitable flushing with a hose." Among the various materials used for the floor in the past Beatson (6) mentions terazzo (small marble blocks joined by Portland cement and then polished) tiles of various kinds, glass, asphalt, cement, plaster of Paris soaked in oil and linoleum. The objections to the use of these materials are: tiles must have grooves and joints between them and are liable to stain; glass is too slippery; asphalt, too soft and absorbent;

cement is likely to crack; oiled plaster of Paris is not durable and linoleum will not stand the wear and tear (6). Wheelwright (7) states that where terrazo is used it should be interrupted at certain intervals by marble strips in order to guard against cracking. Hamilton (43) used torgament (an asbestos material) for his floor because it was free from glare. I believe that Knoxville marble is the best material for the floor of the operating room. Second to Knoxville marble I would choose tiles. As Hamilton (43) says, tiles can be fitted so closely now that practically they are a continuous surface. "After all, a sheet of glass if one runs one's finger over it can be shown to hold plenty of dust" (43). What we seek in a material for an operating room floor are smoothness, durability and resistance to the penetration of fluids. Marble is the material that offers these characteristics par excellence, and, as Wheelwright (7) tells us, Tennessee marble is preferable to white Italian or American white marble.

Having viewed with concern the growing custom of constructing operating room floors without drains, and not being impressed with the idea that because a thing is new it must therefore be true, I have sought authority for the *raison d'être* of the drainless operating room. Through the kindness of Dr. L. Grebenc I am able to quote from a letter to "International Medical and Surgical Survey" from Dr. John A. Hornsby, a specialist in hospital construction: "I never think of putting drains in operating room floors. They are nasty, smell, cannot be properly reached for cleaning, and consequently are constantly emitting gases and odors. That is precisely the thing we have been attempting to get away from in our hospital planning for years. The thing to do is to have an absolutely clear floor with the space between the tiles entirely filled so that no cracks are left for dirt, and then to clean with a mop. Sometimes this mopping has to be done during and between operations, but much better so than to have germs and gases and dirt that it is our main work to get rid of. Why take so much trouble and spend so much money to have nonabsorptive floors with turned cove bases, flush with both wall and floor, and then demand that the floors themselves shall be absolutely free from even the smallest cracks, and then at the same time leave one great germ breeder right in the middle of the floor?"

I think that the mop alone will but partially cleanse the floor, leaving behind myriads of more or less virulent germs to be dried and disseminated. Mechanical flushing with scalding water seems more bacteriologically clean to me. I do not believe that a mop on the floor is any more efficacious surgically than a mop on the hands.

Unpleasant odors are no longer considered provocative of disease. Rosenau (44) writes: "The old bugaboo of sewer gas that frightened our fathers before the days of bacteriology is no longer feared by sanitarians, although its influence still pervades the antique plumbing regulations in force in many places. It is indeed desirable to keep the air of sewers from mixing with the air we breathe—the debilitating influence of all impure air should be avoided—but the danger of anyone's becoming infected with the germs of disease by breathing sewer gas is ordinarily so extremely small as to be quite negligible."

It has been shown by several observers that the danger of bacteria being translated from sewers and sewage into the air under usual conditions is very remote. To quote again from Rosenau (44): "Nägeli in 1877 showed that putrescent liquids kept in the same sealed vessel for over two years did not infect each other. Sir Edward Frankland then showed that lithium carbonate in solution did not contaminate the air, but that when effervescence was produced the breaking of the bubbles on the surface of the liquid carried the lithium a distance of twenty-one feet up a vertical tube. The inference was that sewage through fermentation or splashing may send bacteria into the air. Pumpelly in 1881 and others since have shown that bacteria are not given off from liquid if the surface remains unbroken, even though the air may blow over it. In 1893 Miquel began a monumental work on the bacteria of the air. He made routine observations at the Montsouris Observatory, and for four years compared the bacteria in the air of a Paris street with the air of sewers. He found sewer air relatively pure from a bacteriological viewpoint. Carnelly and Haldane in 1877 found fewer bacteria in the sewers under the House of Parliament and other places than in the air of adjacent streets. The number of bacteria was largest in the best ventilated sewers because these brought the street bacteria along with them. Abbot in 1894 showed that cultures of Bacillus prodigiosus are not carried over in bubbles produced by natural fermentation (yeast in a carbohydrate medium), but may be carried a short distance by blowing air at considerable velocity through the culture. He concluded that the danger of bacteria being transmitted from sewage into the air under ordinary circumstances is practically negligible. In 1907 Horrocks revived this question by placing Bacillus prodigiosus in the water closets of a large military hospital in Gibraltar, and recovering them on plates suspended on top of the soil pipes and in man hole openings. His work gave countenance to the views of a number of English sanitarians who maintain the reality of the danger from this source. Winslow repeated Horrock's experiments in 1909, using the ordinary sewage of Boston, and by using quantitative methods threw a different light upon Horrock's conclusions. He found that a vigorous foaming produced very slight bacterial infection of the air—only five prodigiosus colonies in thirty litres of air. Further, the infection always remained localized. Generally, he found the air of house drains singularly free from bacteria. It seems, therefore, theoretically possible but highly improbable, that infection may take place in this way. Practically the question seems to have little importance. Thus, out of a series of examinations of plumbing systems in actual use, Winslow found intestinal bacteria only four times in two hundred litres of air, and these directly at the point of local splashing. If there is any danger of sewage bacteria coming into our houses, it is rather that they are dragged in by rats, roaches, water bugs, and other vermin that use sewers and drains as highways" (44).

The obnoxious gases and evil odors may be pre-

vented by a well trapped drain which need not be in the middle of the floor but may be placed in one corner of the room, the floor slanting in that direction. I believe, however, that mechanical cleansing by flushing with water, even if the drain is untrapped, is surgically safer and cleaner than the most strenuous of moppings.

During the last few years the color of the operating room has demanded considerable attention: Because it suggests all that is immaculate, throwing into bold relief the smallest spot of visible contamination, white has been the color most used for the floors and walls of operating rooms. Sherman (45), however, in 1914 introduced a "spinach green" operating room because of the glare of light encountered by his eyes from white rooms—a glare which rendered his eyes temporarily useless when he looked back into the less illuminated wound. The color scheme, Sherman thought, should start from the red of the blood and of the tissues. He, therefore, advised that green, the complementary color to red, should be chosen for the floor and wainscot. He selected the shade of spinach green because it seemed to be complementary to hemoglobin. The chlorophyl of spinach contains iron, so it is said, in the same chemical combination as is the iron in hemoglobin. Above the level of a six foot wainscot he finished the walls in white tiling up to the ceiling which he painted a bright buff. In this manner he imitated the optical environment out in the fields, where the ground of the surroundings, to above the level of the eyes, is green, and the sky overhead full of white daylight. He next found that the light reflected by the white sheets and towelings was as embarrassing as had been that from the floor. He thereupon had green sheets and towelings provided but found that the color in these materials would not stand sterilization—they would turn dingy gray. Sherman then surrounded the entire operating field with black from which no light whatsoever could be reflected. In addition to towels and sheets of black he also used black gowns and black covers for his instrument tables. Murphy (46), whose abstract of Sherman's paper I am using freely, states that when the hospital of the Colorado Fuel and Iron Company, at Pueblo, was built in 1902, R. W. Corwin, the chief surgeon, had the walls of the operating room covered with sheet lead for the same reason and that black sheets had been in use for two years.

The White Operating Room is the title of an article in which Secor (47) takes issue with Sherman. Secor insists that the admission of sunlight into the operating room is necessary both for illumination and for sterilization. He has built an octagonal room, the ceilings being carried to a point and giving the effect of eight triangular panels. The walls and furniture are white and to protect himself from the glare he uses a modified Mayo cap and wears large amber tinted spectacles. Secor says that white will show up macroscopic dirt much better and that white makes it easier to get rid of microscopic contamination because of the effect of light on bacteria. Tinted walls are much more difficult to keep clean and sterile, says Secor. The same writer thinks that to tint the walls does violence to the esthetic and psychic effect of the pure white room. In The Green Operating Room at St. Luke's Hospital, San Francisco, his latest article on this subject, Sherman (48) tells us that he has changed his sheets, towels and gowns from black to dark blue, deeming dark blue, a pleasant color, preferable to black, the absence of color. He quotes Gardner (49) as saying "in some factories paints having a slightly greenish or other tint would be desirable, since a small amount of some colors may reduce the glare, but will not materially reduce the illumination." Sherman (48) emphasizes the fact that he is striving for maximal illumination with minimal glare. The complimentary character of green to the red of the blood has been the basis for the selection of that color for his operating room. Hering has shown that in pure red there is no green; and that in pure green there is no red. These two colors cannot be perceived at the same time in the same color. As far as sensation goes they are mutually exclusive. Further, Sherman declares that even if green had no special relation to red, it still would be the first or one of the first colors to choose, because of its place near the middle of the spectrum. Many operators are attempting to rest their eyes by requiring that the floor and lower half or more of the walls of the operating room be painted gray or some darker color. The late Francis T. Stewart (51) operated with black sheets and black towels.

To me the question seems of minor importance. If patient, surgeon, assistants and everything that might, could, would or should come in contact with the operative field, are surgically clean the color of the operating room matters little. Rubens is said to have mixed blood with his colors; let the surgeon mix colors with his blood—as long as he does not make any breaks in technic.

It is difficult for many of us who have been educated in surgery during the past fifteen or twenty years to appreciate the fact that most of the preListerian operating rooms were indescribably filthy. About twenty-three years ago Sir William MacCormac (52) delivered an address on Operating Rooms Past and Present, in which he said that he could remember almost complete neglect, in many places, of sanitary conditions in the theatre itself. He had noted an absence of any sufficient regard to surgical cleanliness or often ordinary cleanliness both in the case of the surgeon who operated and of the person of the patient operated upon. "Anyplace," says he, "was considered good enough for an operating room. There were generally sinks which communicated with defective drains, floors and benches innocent of the scrubbing brush or soap and water; marine sponges used and after being imperfectly cleansed were used over and over again. I have known theatres," continues this distinguished surgeon, "that were placed in immediate proximity to the dead house, to which they too often proved the portal." It is only by contrasting those conditions described by Sir William MacCormac with these now prevailing that we can recognize our debt both to a Frenchman and to an Englishman; and that we can realize that operating rooms of today are monuments to the memory and honor of Pasteur and Lister, who founded modern surgery.

The references will appear in the author's reprints.

Editorial Articles

STANDARDS FOR MALNUTRITION.

No health movement of modern times has been of so much significance as that for better nutrition, and though its application is late, when the human being has reached school age, it is, in this instance, much better late than never. The standards set up, however, for the judging of malnutrition have been a little too hard and fast. They have been put forward on the assumption that we are all built along the same lines of architecture, but anyone at all experienced in anthropometry knows that we are not so constructed and that, while there is a fairly fixed mean set of weight-height measurements for children of all lands, they cannot all be brought to conform to this one plan. We are not dealing with children of one type, not even within a single race, and in particular when we are studying the American child. No one is better qualified to "say something" on this matter of standards of nutrition than Charles K. Taylor, and he has said it in an article entitled The Great Underweight Delusion published in a recent number of the *Outlook*. Mr. Taylor made, some years ago, an anthropometric study of children of school age and published a little book giving the results of his work. He found that there was no single type of build at any age that could be considered the norm, but that perfectly healthy children could be classed in three groups—the median or average type, the heavy type, and the slender type.

"It is just as normal and healthy for some children to be more slender than the average and for others to be stocky or thickset, as for others to approximate that average, that it is a matter of inherited type of build, and all we need to do is to see that a child is properly developed for his or her normal type of build. There it is in a nutshell!

"Now very certainly it is quite possible for children to be actually underweight—below the weight they really should have. But you will not learn this by putting them on a pair of scales. The point is not, 'What does the child weigh?' but 'Is the child healthy?' If the child is unhealthy, if the child is suffering from malnutrition, then, for all you know, a child may be very much under the proper weight. The test is not a pair of scales, but a proper medical examination. So that brings us to the second part of our stand. Here it is: When a child is healthy, when a child is in good condition, and particularly when that child's muscles are not flabby, but firm and efficient, then we may be sure that the child's weight is correct, *no matter what it is*. And our work, then, is merely to see that a child has a physical development corresponding to his or her type of build. . . .

"There, we hope our viewpoint has been made clear. It is based on an intensive study of some thousands of children over quite a number of years. And we repeat it finally for the sake of emphasis: If a child is healthy, and is not one of those typically fat children, then that child's weight is correct *no matter what it is*. So our concern should not be over a child's weight, but over a child's health and physical development. And this means a careful study of our school children in these two respects, and it also means, mind you, a proper feeding of school children wherever real malnutrition or underfeeding actually exists. But the standard to go by is not one of weight but of health, and of physical development."

NEUROPSYCHIATRY.

A plea was made by Dr. Adolf Meyer, at the last meeting of the American Neurological Association, for a more comprehensive psychiatrical study of neurological patients by socalled neurologists. He said it was necessary to know more about the psyche of the patient, his wishes, conflicts, problems and possible adjustments This seems fair enough and if we were to take a more comprehensive view of the situation we would realize that unless we did consider these factors we should know comparatively little about the patient. Too much emphasis is placed upon the physical side of medicine in present day practice. Practically our entire medical curriculum is devoted to the study of the chemical and mechanical functions of man. Mind, the most important, the most highly developed part of our organism, is almost entirely disregarded. The study of the emotions receives scarcely passing mention. Yet we know that emotional factors can produce any of the diseases we so fondly study in test tubes. Perhaps the test tube method is more comfortable or gives a greater sense of safety; besides, it is difficult to place emotions and wishes in test tubes. The difficulty is that we have been so busy studying effects that we have disregarded affects which are the most frequent causal factors of bodily derangement.

Meyer has sounded a good note; more of the same type will be heard and soon. We must first find out what our patient's problems are; what difficulties confront him. Then, we must ascertain how he is trying to solve these problems. We must always consider illness as purposeful if not from one angle

then from another—something is trying to do something. If we search carefully enough, the cause will become apparent. True, the goals may be false. The organism may be endangered in order that an adjustment, even a false one, may be made for one segment of the organism.

One day, not too far distant, we medical men shall see man as an entity, as an organism striving for certain things and making maladjustments in the false calculations of values. Frequently, all too frequently, infantile levels are clung to for minor comforts; these must be given up or integrated into constructive adult activity if the organism is to survive. The physician of the future will know more of these values and will be better able to guide his patients along pathways of achievement. He will be able, by virtue of his knowledge of human behavior and psychical maladjustments, to prevent most of the derangements, mental and physical, which are so commonly encountered in medical practice.

Meyer must have seen the coming of this and has given warning in his address. Many will hear him; a few will profit from his foresight.

HISTORY OF DENTAL CARIES.

While dental caries is not a recent disease nor a disease confined to socalled civilization (whatever that is, or whenever it began), it has been substantially proven that it is vastly more common in more recent times and among those who eat soft foods and concentrated diets. The recently published *Studies in the Palcopathology of Egypt,* by Sir Marc Armand-Ruffer, would seem to upset this view, in that he makes the statement that caries was of common occurrence in predynastic Egypt. We are all inclined to believe that if we see a thing in print, more particularly in book print, it is true. American reviewers of this book have, very naturally, taken this attitude toward the statement of Ruffer, and, as it is of more practical moment than all the rest of the volume, they have called especial attention to it.

A reviewer in the *Lancet* also pays particular attention to this point. He says, "Sir Marc Ruffer was one of those gentle diplomatists who are ready to take other people at their own valuation. . . . One instance of this is of sufficient practical importance at the present time to call for special reference. This is the *Study of Abnormalities and Pathology of Ancient Egyptian Teeth* . . . reproduced as a chapter of the book. The claim made on page 247 as to the common occurrence of dental caries in predynastic Egyptians is utterly misleading. This affection was extremely rare in Egypt until the latter part of the Second Dynasty, and it was not really common (and this only in the upper classes) until the time of the Pyramid Age (Fourth Dynasty)."

Whether dental caries is the result of deficiency in the physical or chemical character of the food or of both combined it is certainly a defective food disease. Apparently the lack of certain chemicals (or a preponderance of others) is the chief, if not the whole, fault. There seems no other way of explaining the rapid rotting of the first set of teeth so common among certain classes of children. At any rate, it is impossible to make good instruments out of poor materials or to preserve for their maximum age teeth that are badly built. But the chemistry and construction of teeth does not begin after birth. It begins in the early weeks of prenatal existence and the food of the parent must be of great importance in the making of teeth in the child.

To sum up the possible conditions leading to caries, they are: a, lack of chemical constituents for the making of teeth, prenatal, postnatal, or both (a preponderance of certain foods, such as sugar, may possibly have the same effect by interfering with the normal use of tooth material in the diet); b, lack of use of the teeth from insufficiently coarse food; c, abnormal chemical condition of the mouth from diet faulty as to quality or quantity. Of these three possible factors the first looms largest and the second least, the third being problematic and connected with the first. As to the rôle of artificial cleansing in the preservation of teeth there is little to prove and much to disprove that it has any effect in preventing caries. Since caries is our most common (and most expensive) disease the subject is deserving of more study than any other. We are glad to note that investigation of the matter on a worthy scale has been begun by English sanitarians.

THE NITRITOID CRISIS.

The nitritoid crisis is at present regarded as a peculiar form of Widal's hemoclastic shock and is comprised among the phenomena of shock in which there is true anaphylaxis, colloidoclasia and shock due to heterogeneous substances—colloids, albumins, peptone, barium oxide—and like the latter it is above all characterized by a drop in the blood pressure.

In his researches on the phenomena of shock resulting from the arsenical products in dogs, Pomaret was able to determine the experimental factors which govern the hypotension shock due to these compounds. In order to obtain them, the phenolic function of the arsenous and novarsenous compounds must be that of precipitating for albumins, which is effected by an intravenous injection of

nonalkalinized salvarsan, hence acid, and that of neosalvarsan acidified by a weak acid without any chemical action on the drug, such as a one per cent. or two per cent. solution of citric acid.

In vitro, these acid solutions, as well as the naturally acid sulpharsenobenzol, precipitate the albumins in an absorbable compound, soluble in alkalines. *In vivo,* these same solutions, according to the concentration, the acidity and rapidity of the injection, produce an entire gamut of physical states of the adsorption complex, from flocculation to coagulation, represented by colloidal complexes either secondarily soluble, on account of the bicarbonate of the blood; dispersively, a dilute injection slowly given, or indispersively, by a rapid injection, whose presence only in the circulation in this case will be accompanied by phenomena of sudden shock, similar to that produced by insoluble bodies. Hence the rupture of humoral equilibrium is represented by a complex intravascular flocculation of the colloidal micellæ of the serum, as occurs in true anaphylactic shock.

Since the physical mechanism of shock from the arsenic compounds is of the same nature, it may be regarded as phenolic shock, because experimentally it can be produced by intravenous injections of trinitrophenol or with ordinary phenol. Therefore it is not the result of chemotactic phenomena, but a purely heterocolloidoclastic process of phenolic origin with hematic disorders.

In the nitritoid crisis the condition is the same as in experimental shock in animals, the phenomenon shock being considered as independent of any previous sensitization, the hypotension ensuing upon an injection of some arsenical compound of good manufacture and not containing the indeterminate vasodilator toxin.

Whether the solution injected is acid, alkaline or neutral, the factor "blood acidity" intervenes, which is enough to cause flocculation. Usually, in subjects possessing a normal alkaline reserve, the flocculate is either secondarily soluble by the sodium bicarbonate of the plasma or is diffusible without incident, but this is not the case in persons habitually intolerant of arsenical compounds whose plasma cannot dissolve the flocculates as fast as they are formed.

This conception of the process has been confirmed by Pomaret (*Bulletin de l'Academie de Médecine,* July 27, 1921) in his experimental work on dogs, in particular when the animal was acidosic, and with a temporary hypotension induced by an injection of a neutral solution of novarsenobenzol, while no drop in the blood pressure is observed if the alkaline reserve is normal. Recent researches have shown that certain intolerant subjects in whom postarsenical erythrodermias develop are in reality acidosic, a fact which confirms Pomaret's previous opinion derived from his experimental work.

As to arsenoxide, Pomaret has found it to be a very energetic hypertensor, giving chart curves similar to adrenalin, so that it can play no part in the production of nitritoid crisis.

PROFESSIONAL DONORS OF HUMAN BLOOD.

A new public health problem, meriting serious attention from authorities, is that caused by the condition of extreme secondary anemia to be found in a number of professional donors of transfused blood. This is the opinion of Dr. L. W. Famulener, of the pathological laboratory of St. Luke's Hospital, expressed in an article in the *American Journal of Public Health* for May. Since blood transfusion methods have been established on a firm basis through laboratory tests and improved operative technic, and have been so frequently resorted to, not only in hospitals but also in private practice, the demand for blood donors has been greatly increased, until a certain group of men, attracted no doubt by the apparently easy life and money offered, have adopted blood giving as a profession. Although some of these men show as yet no apparent ill effects, and others only a slight anemia, a third group present extreme secondary anemia demanding medical attention. Among those who have come under observation at St. Luke's Hospital some presented a more marked anemia than the patients to whom a transfusion had been considered advisable.

"Responsibility for these conditions," says Dr. Famulener, "may be more or less charged to the donor, the clinician, and to the laboratory worker. The donor may exploit his blood regenerating powers for financial gain, and he may also lead an irregular life. The clinician may draw too much blood from the donor at one time, or at too short intervals; he may also be remiss in not having a full knowledge of the blood condition of the donor. The laboratory worker, who groups the blood of the patient and donor, does the cross tests between the two as well as the Wassermann reaction, may neglect to do a red blood cell count and a hemoglobin determination."

To remedy so serious a condition the writer offers several suggestions: Professional donors might be registered by public health boards, examined and officially certified as fit; the physician or surgeon performing the transfusion should be required to subject the donor to a careful preliminary physical ex-

amination and full laboratory blood tests, including red blood cell count, hemoglobin determination, grouping and cross tests of blood, and the Wassermann test. He should be required also to report officially the transfusions he makes, giving essential data relative to patient and donor—namely, Wassermann reaction, red blood cell count, percentage of hemoglobin before taking the blood, and the amount of blood withdrawn. By some such system, the author believes, not only can anemic donors be protected and prevented from losing their therapeutic and economic value, as often happens, but also normal, healthy individuals can be safeguarded from acquiring anemic conditions.

SPECIFIC DRUGS.

The ideal of the therapia magna sterilisans, a specific therapeutic agent for every variety of infection, has been placed in the foreground of contemporary interest through the labors of Ehrlich. However, it is clear that the underlying principle is not a creation of the last century, but rather an heirloom handed down to us from remote antiquity. Thus the medical code, collected by Confucius, still the orthodox guide of medical practice in China, gives exact directions concerning the remedies applicable to the various affections, then recognized. The ancient Egyptian pharmacopœia, similar in nature and purpose, has been transmitted to us in numerous inscriptions in such detail that it is almost simpler to become acquainted with the ancient practice than with that of our own times. At least, there is not much doubt left in the clinical teaching of the hieroglyphics as to what was considered the correct and only specific drug or mixture of drugs for any given known clinical phenomenon. It is clear, then, that the demand for specific therapy is age old and universal, and engraved into the thoughts and dreams of mankind even firmer than in brass or stone.

It appears well to reflect on the bearing of recent scientific advances on this problem. We have witnessed in the immediate past a progressive contraction in the number of pathological entities, termed diseases. Again and again ancient clinical units have been shown to be but groups of symptoms induced by a deeper lying process. At the same time, it has been recognized more widely that the same fundamental factor may result in clinical manifestations most dissimilar and varied in nature. Medical science shares this tendency to simplification and unification with other sciences. The chief instance is, no doubt, furnished by the resolution of the chemical atom into the proton and its electrons.

The period may be recalled in the memory of our senior brethren, when the budding clinician stepped into the waiting room of the dispensary loaded with bottles of medicine. Those clients suffering from constipation were then invited to raise their hands to receive the specific bottle of medicine, while subsequently the reverse condition was dealt with in a similar manner. No doubt, the constipation complained of, was diagnosed as belonging to the idiopathic variety.

In accordance with the evolution of medical thought, the actual list of specific remedies has been reduced to very modest proportions. A comparison of the drugs in actual use today with the pharmacopœias of antiquity, or even with the concoctions employed two centuries ago, is illuminating and suggests that we are moving in the right direction. Even the few remaining specifics are under constant critical supervision. It has been suggested that quinine exerts its effect only indirectly on the malarial parasite by changing the physical status of the red blood corpuscles. McDonaugh, the English syphilologist, lays claim to having established the fact that the beneficial action of mercury, arsenic and iodide depends entirely on their effect on cell metabolism. In this connection a recent observation of Dale may be related.

Ipecacuanha is one of the few drugs which have maintained the claim to possess specific properties. The attempt has been made to isolate the most potent among its alkaloids which, at the same time, would have the least affinity for the tissues of the host. Finally, a substance was obtained which appeared to fulfil all expectations. However, when the body was substituted for the test tube, the effect of the drug on the clinical picture and manifestations was apparently unnoticeable. It is, of course, altogether unknown whether this failure is due to the very fact that the substance is inert toward the tissues, or whether the properties of the drug or of the parasites are modified, while within the host.

Such considerations are of more than passing historical significance. They convey the lesson that our knowledge of the properties of even the most common drugs is far from being complete. This applies all the more to our insight into the mechanism of their action on the cells of the body.

The chief value, however, lies in the stimulation of inquiry into the entity of clinical symptoms. This process advances our knowledge of the fundamental factors of pathological and, incidentally, of biological phenomena and places into our hands nonspecific remedies such as physiotherapy and hygiene, based on scientific facts.

INDUCED INEQUALITY OF THE PUPILS AND THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

The notion of irregularity of the pupils in pleuropulmonary affections is classical. Sergent (*Bulletin de l'Academie de Médecine,* Paris, 1921) has especially studied this symptom in tuberculosis and apical pleuritis in particular. He attempts to show the importance of unilateral mydriasis due to irritation of the sympathetic, in the diagnosis of recent apical lesions undergoing evolution. This unilateral mydriasis is much more frequent than is usually suspected. Added to other symptoms, such as pain on pressure over the apex, supraclavicular adenitis and pleural roughness, it constitutes a syndrome whose symptomological value is great. Frequently it is the first element of the syndrome to appear. As it would be interesting to ascertain if this symptom could be induced experimentally by instilling a collyrium in equal quantity in each eye, that would reveal a latent inequality of the pupils and at the same time offer a valuable element in making an early diagnosis which is often such a delicate matter in pulmonary tuberculosis, Sergent carried out this test with the following technic:

First of all one must previously ascertain that the subject has no visual disturbance, no apparent lesion of the globe, nor any change in the pupil reflexes. Two drops of a one in one thousand solution of atropine is instilled into each eye, as the reaction is too slow in taking place when only one drop is used. The reaction should be carefully watched from the start as it may be overlooked if not detected at its onset. It usually begins in ten or twelve minutes and progressively increases, becoming complete in twenty to twenty-five minutes. When there is sensitization of one pupil it begins dilating and attains its maximum dilatation some little time before its fellow. At the same time—and this is more important—it will be noted that the sensitized pupil loses its reflex to light before the other, as well as its accommodation to distance.

When the maximum effect of the atropine has been reached the pupils are equally dilated, both having lost all power of accommodation, and they remain in this state for one to three days, after which the pupil on the healthy side contracts and recuperates its power of accommodation, while the sensitized pupil remains larger and goes through another phase of inequality which is prolonged much longer than the short period of inequality at the onset. To derive all the value of this test great care must be given to an exact dosage of the solution instilled into each eye. The test presents no danger when not essayed in elderly subjects or those with glaucoma.

As to results, in ten subjects completely free from any pleuropulmonary lesion, the test was entirely negative. In eighteen subjects, with a confirmed unilateral lesion, the induced homologous mydriasis developed with great distinctness in eleven and in these eleven there were signs of general evolution of tuberculosis. In three subjects the pupils remained equal during the entire duration of the action of the atropine and in these three cases the lesions were cicatricial without any evidence of evolution. In four subjects the test produced irregularity of the pupils and these subjects presented spontaneous myosis probably of paralytic nature.

In twenty-two subjects presenting lesions hardly perceptible by physical signs, in fifteen there was no spontaneous inequality but in all the induced mydriasis occurred on the side where auscultation had caused suspicion of tuberculosis. In seven subjects the pupils were unequal before the test and in six of them this confirmed the localization of the pulmonary process. In the seventh subject the inequality was inverted but both apices were found to be involved.

Obituary.

JOHN A. WYETH, M. D.,

of New York.

On May 28th one of the city's most distinguished surgeons and writers on medical subjects, Dr. John A. Wyeth, died suddenly of heart disease at his home, 242 Lexington Avenue, at the age of seventy-seven years. His death followed quickly upon an early morning attack of acute indigestion. Dr. Wyeth is well known, not only through his professional and literary activities, but also as the founder of the Polyclinic Hospital. Previous to building this hospital, Dr. Wyeth had organized in 1881 the Polyclinic Medical School, whose headquarters were in the old hospital building at 216 East Thirty-sixth Street. This was the first postgraduate medical school in New York city, and as such attracted many graduate physicians from all parts of the country. When the new building in West Fiftieth Street was opened, Dr. Wyeth was made president of the hospital and gave up his extensive private practice to devote himself to the work of the institution.

Dr. Wyeth was born at Missionary Station, Ala., in 1845, and fought on the side of the South in the Civil War as a member of Russell's Fourth Alabama Cavalry troop. He began practice in New York in 1873 and soon built up a wide clientèle. His first wife, whose death occurred in 1915, was Florence Nightingale Sims, daughter of the well known physician, Dr. J. Marion Sims. Their three children are Marion Sims Wyeth, architect of New York city; John A. Wyeth, Jr., instructor at Princeton University; and Mrs. Alan McLean, of Morristown, N. J.

In 1918 Dr. Wyeth married Miss Marguerite Chalifoux, a lecturer on dietetics at the Polyclinic Hospital.

In addition to conducting his professional activities extending over nearly forty years, Dr. Wyeth was the author of several valuable works on surgery, among them the *Textbook on Surgery*, which went through a number of editions, and the *Handbook of Medical and Surgical Reference*. He wrote also many monographs on surgical subjects, Civil War sketches, numerous historical and biographical sketches, and articles for well known magazines, especially *Harper's* and the *Century*. His *Life of General Nathan Bedford Forrest* was published in 1899 by Harper Brothers.

Among distinguished offices held by Dr. Wyeth were the presidencies of the American Medical Association, of the New York Academy of Medicine, and of the Southern Society. He was for many years a prominent member of the Union League Club.

In the practice of the newer specialty of bronchoscopy and esophagoscopy he was second to only one man in this country, perhaps in the world. In devising new instruments and methods of simplifying their application, he stood preeminent.

We all must contemplate, with a deep sense of loss, the removal in his prime of this outstanding personality. The loss to the profession and the public is almost irretrievable, and to those of his close personal friends, with whom he was in intimate contact, it is irremediable. Realizing lately, that his career must be short, he pursued his work with cheerful confidence, not sparing himself, with a courage that must be a lesson to all who knew him well.

> So be my passing!
> My task accomplished and the long day done,
> My wages taken, and in my heart
> Some late lark singing,
> Let me be gathered to the quiet west,
> The sundown, splendid and serene,
> Death.

HENRY LOWNDES LYNAH, M. D.,

of New York.

Henry Lowndes Lynah was born in Charleston S. C., on December 1, 1878, and died at his father's home in that city on March 31, 1922. He was graduated from the South Carolina Medical College on April 3, 1900, and immediately afterward entered the Johns Hopkins Hospital in Baltimore as extern, later becoming intern in that institution. His next move was to New York, where he was for a considerable time intern at the St. Mark's, Kingston Avenue, and Willard Parker Hospitals. In private work he was widely known in New York for many years.

HENRY LOWNDES LYNAH, M. D.

He became a member of the American Academy of Ophthalmology and Oto-Laryngology, the American Laryngological, Rhinological and Otological Society, the American Laryngological Association, the Medical Society of the State of New York, being this year Chairman of its Laryngological Section. He was one of the founders and third president of the American Bronchoscopic Society.

Professionally he was actively engaged in the practice of his specialty at the Willard Parker and Riverside Hospitals, the Kingston Avenue Hospital and the Queensborough and Otisville Hospitals. He was consulting bronchoscopist and esophagoscopist to the French and Lenox Hill Hospitals, the New York Eye and Ear Infirmary, the Skin and Cancer Hospital, and the Methodist Episcopal Hospital of Brooklyn. His teaching positions were instructor in laryngology and intubation at the University of Bellevue Hospital Medical College, and he was made professor of bronchoscopy and esophagoscopy in the New York Polyclinic.

SIR ALFRED PEARCE GOULD.

of London.

Sir Alfred Pearce Gould, the distinguished surgeon, died suddenly in London on April 19th. Alfred Pearce Gould was born in Norwich in 1852, the second son of the Rev. George Gould, a nonconformist minister. He was educated at University College, and at University College Hospital. In 1873 he was admitted a member of the Royal College of Surgeons, being elected E. R. C. S. in 1877, serving on the Council from 1900 to 1916 and acting as vice-president from 1908 to 1910. He had an equally distinguished career at the University of London, where he obtained his degree of Master of Surgery in 1876, served as a member of the senate in 1900, was dean of the faculty of medicine from 1912 to 1916, and acted as vice-chancellor during the years 1916-17. He began his professional life in 1877 as assistant surgeon and lecturer on anatomy at the Westminster Hospital, posts which he resigned in 1882, on his election as assistant surgeon to the Middlesex Hospital. He remained attached to that hospital for the rest of his life. He was president of the Royal Society of Medicine in 1902, and he was president of the Röntgen Society. In 1911 he was made a K. C. V. O., and in 1919 he was made a C. B. E.

During the war he was active in his post as Officer-in-Charge of the Surgical Division of the Third London General Hospital at Wandsworth. He published *The Elements of Surgical Diagnosis*, of which the fifth edition appeared in 1919, and was joint editor with Dr. Collins Warren of the *International Textbook of Surgery*.

Sir Alfred Pearce Gould was a man of strong character, with decided opinions, which he never took the trouble to conceal. He was somewhat self-willed and was disposed to consider only his own side of a question and therefore did not make an ideal chairman. However, if his temper was hasty, he was always ready to apologize and amenable to representations made privately. Throughout his life he was a total abstainer, and a fervent advocate of temperance. He was possessed of strong religious convictions and fervor and in these respects resembled Sir German Sims Woodhead, whose death was recorded a few weeks ago.

Sir Alfred Pearce Gould was a general surgeon with a leaning to the treatment of cancer. Indeed, he spent a goodly part of his professional life in a struggle with that greatest of the foes of man. The Cancer Research Department of the Middlesex Hospital, the creation and development of which was largely due to Sir R. Bland Sutton and him, is his most fitting memorial. He was an ardent champion of radium treatment, or rather he did his best to secure a full and fair trial of this form of treatment, and he wrote encouragingly on the subject when most other persons were still incredulous as to the value of the treatment.

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JOHN HERBERT CLAIBORNE, M. D.,

of New York.

John Herbert Claiborne, the well known eye specialist, died suddenly of heart disease on May 27th at his home, 17 West Eleventh Street, New York. Dr. Claiborne was born in Louisburg, N. C., June 29, 1861. He was graduated from the University of Virginia in 1883, after which he spent some time studying in European capitals. Upon his return to this country he took up his residence in New York city and established a practice, the active and successful character of which is well known and acknowledged by his friends and colleagues. Dr. Claiborne was a member of one of Virginia's oldest and best known families. He was a descendant of Colonel William G. Claiborne, earliest Royal Secretary and Treasurer of the Colony of Virginia, and his mother was a great granddaughter of John Alston, Justice of the Supreme Court of the Colony of North Carolina in 1734. Dr. Claiborne himself contributed distinguished work to the cause of humanity in addition to his work in professional practice.

In the war with Spain he served in the line, rising from the rank of lieutenant to captain in the Twelfth New York Volunteers. In the recent war he devoted himself to many patriotic movements as well as giving valuable service to draft boards and recruiting agencies in his profession of eye specialist. During his lifetime he held many notable offices, among them that of the post of Governor of the Virginians.

He was a member of many well known societies, among them the Southerners Society, the Society of the Cincinnati, the Society of Foreign Wars, and the University, Calumet and Union Clubs. Dr. Claiborne is survived by his widow and a son, John Herbert, Jr., now a student at Lafayette College.

News Items.

Annual Meeting of Medical Society of New Jersey.—The one hundred and fifty-sixth annual meeting of the Medical Society of New Jersey will be held at the Monmouth Hotel, Spring Lake, N. J., June 21st, 22d and 23d, under the presidency of Dr. Henry B. Costill, of Trenton. An interesting program has been arranged and the meeting gives promise of being unusually interesting.

Dr. Gwathmey Honored.—Dr. James Tayloe Gwathmey, of New York, was presented with a silver loving cup at a dinner given in his honor by the American Association of Anesthetists in the Hotel Jefferson, St. Louis. The inscription on the cup reads: "Founder and first president of American Association of Anesthetists for advances in the research, practice and literature of anesthesia, 1912-1922."

Pathology and Diagnosis of Tumors.—A course in the pathology and diagnosis of tumors will be given by Professor William H. Woglom, M. D., at the Institute of Cancer Research, 1145 Amsterdam Avenue, in connection with the summer session of Columbia University, New York, beginning on July 10, 1922, and lasting for six weeks. Application should be made to the Director of the Summer Session, Columbia University, New York.

Civil Service Examination for Toxicologist.—The United States Civil Service Commission announces examinations for toxicologists in the Chemical Warfare Service, Edgewood Arsenal, Edgewood, Md., as follows: Toxicologist, $3,600 to $5,000 a year; associate toxicologist, $2,500 to $3,600 a year; assistant toxicologist, $1,800 to $2,500 a year. Receipt of applications for these examinations will close on July 3, 1922.

Medical Women's International Association.—The second meeting of the Medical Women's International Association will be held at Geneva, Switzerland, September 4 to 17, 1922. All members are urged to be present. Each society of medical women in the world is invited to send one eligible delegate and an additional delegate for every hundred members. Interesting reports will be read by medical women from different countries and the constitution of the organization will probably be revised in accordance with the provisions under which it was adopted. Clinics in the different European countries may be visited en route.

New Officers of the A. M. A.—Dr. Ray Lyman Wilbur, of Stanford University, California, was elected president-elect of the American Medical Association, at the recent annual meeting held in St. Louis, Mo., under the presidency of Dr. G. E. de Schweinitz, of Philadelphia. Other officers were elected as follows: Dr. Willard Bartlett, of St. Louis, Mo., vice-president; Dr. Alexander R. Craig, of Chicago, reelected secretary; Dr. Austin A. Hayden, of Chicago, treasurer; Dr. Frederick C. Warnshuis, of Grand Rapids, Mich., speaker of the House of Delegates; Dr. L. Rock Sleyster, of Wauwatosa, Wis., vice-speaker of the House of Delegates; trustees for three years, Dr. A. R. Mitchell, of Lincoln, Neb., Dr. D. Chester Brown, of Danbury, Conn., and Dr. Oscar Dowling, of New Orleans.

Mr. Baker's Gifts to New York Hospital.—At a meeting of the board of governors of the Society of the New York Hospital, held on Tuesday, June 6th, Edward W. Sheldon, president, announced the gift of $500,000 in United States Victory Loan three and three quarter per cent. notes from George F. Baker, a governor of the society. The board, in accepting the gift, unanimously voted to establish the George F. Baker Endowment Fund of $750,000, consisting of the present donation of $500,000 and the $250,000 given to the society by Mr. Baker in 1912.

Hospital for Shell Shocked Soldiers in Bavaria.—August Heckscher, of New York, has donated ten million marks for the erection in Munich of a hospital for shell shocked soldiers. Mr. Heckscher, who is a native of Hamburg, has given millions of dollars to philanthropic enterprises here in the last few years. His largest gift was of land, property and cash endowment for the Heckscher Foundation for Children, amounting to about $4,000,000. A new building for the foundation is nearing completion at Fifth Avenue and 105th Street, and will provide a home for the Society for the Prevention of Cruelty to Children and play facilities for thousands of children. The structure will be opened this summer.

Smithsonian Institution to House Public Health Exhibit.—The National Committee on Exhibits Showing Advances in Sanitary Science has recently been formed in Washington, D. C., for the purpose of collecting and preparing material for a great popular public health exhibit in the Capitol. The members of the committee include: Surgeon General H. S. Cumming, United States Public Health Service, chairman; Dr. D. B. Armstrong, National Health Council; Miss Mabel T. Boardman, American Red Cross; Surgeon General M. W. Ireland, United States Army Medical Corps; Dr. Victor C. Vaughan, National Research Council; Dr. C. D. Walcott, Smithsonian Institution; James A. Tobey, National Health Council, secretary. Space for the proposed exhibit has been placed at the disposal of the committee by the Smithsonian Institution, which is visited by more than half a million persons annually. Plans are under way to install exhibit material secured from official and voluntary health agencies. The secretary's office is in the national headquarters of the Red Cross at Washington.

Public Health Service Entrance Examinations.—The examination of candidates for entrance into the regular corps of the United States Public Health Service will be held July 10, 1922, at Washington, D. C., New York, Chicago, San Francisco and New Orleans. Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine from some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written and clinical tests before a board of medical officers and undergo a physical examination. Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate. Requests for information concerning this examination should be addressed to the Surgeon General, United States Public Health Service, Washington, D. C.

Personal.—Dr. Joseph Blake has again been honored by the French Government, by being made an officer in the French Legion of Honor. During the war he was made a Chevalier at the opening of the Red Cross Hospital in Paris.

Dr. Hilding Berglund, of Boston, has been awarded the John White Browne scholarship for research at the Harvard Medical School.

Dr. Ethel M. Watters, of San Francisco, has been appointed consultant in the administration of the Sheppard-Towner Maternity Act. Dr. Watters, who received her medical degree from Johns Hopkins University, has been director of the Bureau of Child Hygiene in the California State Board of Health.

Dr. Henry Dwight Chapin has been invited by the English-Speaking Union of England to make an address in London. He is sailing on June 22d and will speak on The Rôle of the Child in Cementing International Relations. He will also make an address on reducing infant mortality in London Baby Week—the first week in July.

Dr. Albert H. Freiberg, professor of orthopedic surgery at the University of Cincinnati, College of Medicine, has been elected president of the Cincinnati Academy of Medicine.

Dr. Robert A. Strong, clinical professor of pediatrics, Tulane University, was elected president of the Air Service Medical Association, at the annual meeting held in St. Louis, May 23d, under the presidency of Brigadier General H. Wilmer, of Washington, D. C.

Harvard School of Public Health to Be Opened in September.—The first definite announcement has been made of the scope of the new school of public health which will be opened at Harvard University in September. It states that systematic instruction will be given leading to the degrees of bachelor of public health, master of public health and doctor of public health, while students in the school will be eligible under certain conditions to be candidates for the degree of doctor of philosophy in hygiene or of doctor of medical sciences.

The new school is the outgrowth and continuation of the school jointly conducted by Harvard and the Massachusetts Institute of Technology since 1913, and will also include certain departments, such as those of industrial hygiene and tropical medicine, which have hitherto been a part of the Harvard Medical School. It will be closely associated with the medical school, and for the present its headquarters will be at the medical school buildings on Longwood Avenue, Boston. It will have its own faculty, however, and to a certain extent its own buildings and laboratories, although Dr. David L. Edsall will serve as dean of both the medical school and the school of public health.

The faculty of the school, in addition to Dr. Edsall, will include Dr. Milton J. Rosenau, Dr. Richard P. Strong, Dr. Walter B. Cannon, Dr. Ernest E. Tyzzer, Dr. C. Macfie Campbell and Dr. Cecil K. Drinker, all of the staff of the Medical School; Dr. Roger T. Lee, professor of hygiene at Harvard; Prof. Lawrence J. Henderson, Prof. George C. Whipple, of the Harvard Engineering School, and Prof. Edwin B. Wilson.

LONDON LETTER.

(From Our Own Correspondent)

London, *May 2, 1922.*

A New Bacillus—The Royal College of Physicians—The Situation as Regards Consultants and the Need for Reforms in Medical Practice—Mental Hygiene Congress in Paris—London School of Hygiene—Amalgamation of Norwich Hospitals—The Earliest Account of Pellagra in Egypt.

Dr. Arnold Renshaw and Mr. Fairbrother recently gave an interesting account of the results of their investigations in regard to the employment of dyestuffs in the treatment of disease. They showed that in certain diseases the use of suitable dyestuffs was followed by beneficial effects and gave reason to hope that their investigations would prove that several other diseases could be treated successfully by similar means.

In the *British Medical Journal* for April 29th, these investigators announced the discovery of a new microbe found in diabetic patients. In regarding diabetes from the point of view of its mechanism the authors point out that little is known concerning the source of the socalled acetone bodies, which in this disease are eliminated from the body. It is the general opinion of those who have studied the matter that these substances are derived from the protein molecule, from the fats of the tissues, or even from carbohydrates, but the most common belief is that they are derived from fats. Dr. Renshaw and Mr. Fairbrother, in 1919, while studying fermentation, observed that products were formed from starches which resembled closely those met with in the body in diabetes. It then occurred to them that it was not unlikely that the bacteria causing the fermentation in starches might also be at work in diabetes. Several patients were examined and in the bowel of each a germ was found capable of producing the acetone bodies. This bacillus is rod shaped and forms spores. It is anaerobic and has been given the name of Bacillus amyloclasticus intestinalis. In all, nine cases of diabetes have been examined, and in seven of them this germ was found. The authors draw attention to the fact that the acetone bacillus, which was used during the war, was believed to thrive on decaying vegetable matter. Northrup isolated Bacillus acetoethylicum from bad potatoes. Also jute retting is assumed to be due to a similar organism, and it appears somewhat more than a coincidence that diabetes is of comparatively frequent occurrence among the jute workers of Dundee. The authors state that as it occurs on decaying vegetable matter, it is not difficult to understand how such a heat resisting, spore forming organism should enter the bowel of human beings. As far as treatment of diabetes is concerned it is suggested that it may be feasible to rid the system of the bacillus by employing other bacilli to nullify its action. It is known that the fermentation which produces acetone for commercial purposes can be checked by a germ called Bacillus bolutans, and by other germs. The treatment in view is to use these to hinder the production of acetone in the human body.

Finally, Dr. Renshaw and Mr. Fairbrother declare that it does not seem improbable that such methods, combined with a diet of foods which the bacteria cannot assimilate, will prove an important factor in treatment, together with the administration of certain antiseptics.

Among other business transacted at a meeting of the Royal College of Physicians held on April 27th, the president of the college, Sir Humphry Rolleston, was appointed to represent the college at the celebration of the seventh centenary of the foundation of the University of Padua, which takes place on May 11th to 17th. Sir Frederick Andrewes was appointed a representative of the college on the Lister Institute of Preventive Medicine.

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Recently there has been a good deal of discussion, some of it verging on the acrimonious, with regard to the comparative knowledge and skill of the specialists of Harley Street, the London sanctuary of the foremost physicians and surgeons, and the all round practitioners. It was argued that, as a rule the advice and treatment of the specialist was not worth the high fee charged, and that in many cases the ordinary practitioner would do the patient quite as much good at a tithe of the cost. It was further pointed out that the public was beginning to recognize this fact and that in consequence the consultants were suffering severely from the financial view. While it is agreed that specialism may be overdone and too high charges made, it is obvious that a man who has made a specialty of a disease or types of disease knows more about the subject than a man who has not gone into the question so deeply. Some of the later letters deal with a phase of medicinal and surgical treatment which has long called for reform in this country.

As a correspondent to the *Times* points out, the real crux of the problem is the lack of hospitals for the middle classes, or of well run private clinics which should take the place of our present hopeless system of expensive, inadequate nursing homes. Places are needed where patients suffering from difficult or obscure maladies can be treated and every investigation made for an inclusive fee. The writer goes on to say that a man does not just "choose to set up as a consultant" as one of the correspondents stated. There is a straight and narrow way that a man must follow if he wishes to become a consultant. It seems that the two great qualities in a doctor that are needed are knowledge and honor. Strangely enough, there appears to be an inveterate tendency amongst the public to hanker after the irregular form of practice. To the quack people will pay large sums gladly. This letter ends by saying that being in Harley Street is not all "sitting on your seat raking in the guineas" and the following will serve for the biography of many a consultant. The "Inter. B. Sc." from school, a scholarship to Oxford or Cambridge, prizes, and a high place in honors at the end of his career there. Then to a hospital in London to study clinical medicine for some years, perhaps dispensing for a doctor in the evenings in return for board and lodging, and giving some ill paid lectures in physiology or some other subject. Then after qualifying, a house physicianship at his hospital and then for years doing such appointments as unpaid clinical assistant in various special departments and special hospitals to learn a little more of the difficult art of medicine, keeping his head above water by doing

periodical "locums" in private practice, at the same time working for higher examinations. He has indeed to "scorn delights and live laborious days." Finally, having acquired the necessary degrees and qualifications, getting on to the staff of a hospital, an honorary appointment—like all the others, and in the waiting period, after a heavy day's work, coaching and coming home at night often exhausted and almost too tired to do the reading that is necessary to keep abreast of the advance continually being made. Slowly, very slowly his practice comes, but if he makes good, it comes, as a rule, surely. The truth really is that medical practice in this country is changing in character and will undoubtedly continue to change. Of course, specialists will always be in reqnest, but not so much as formerly.

There is a pressing need for nursing homes for those with limited means, or all the hospitals should have paying wards in which patients could be treated and charged according to their incomes. Moreover, the trend of present day medicine is towards prevention rather than cure. Prevention by good sanitation, hygiene, diet and so on, and prevention by Sir James Mackenzie's methods, that is, the diagnosis of early symptoms of disease, and preventing these symptoms from developing.

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From June 1st to 4th a Congress was held in Paris, organized by the *Ligue Francaise d'Hygiène Mentale*, and under the patronage of the President of the French Republic. The following were the principal subjects discussed: General Principles of Treatment of the Psychopath, introduced by Dr. Antheaume; Occupational Selection in Relation to Mental Hygiene, introduced by M. Lahy; Educational Methods and Applied Psychology, introduced by Prof. Claparède; An International Understanding for the Furtherance of Scientific Research Into Mental Hygiene, introduced by Prof. Rabaud; and Mental Hygiene in the Family, introduced by Dr. Toulouse. The general secretary of the Congress is Dr. Genil-Perrin, Paris.

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The Rockefeller Foundation has acquired recently, on the recommendation of the Minister of Health, a site in Bloomsbury for the proposed London School of Hygiene. The site adjoins the land reserved by the Government for the new buildings of the University of London.

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Norwich, the capital of the Eastern Counties of England, is one of the oldest cities in the kingdom. In the time of the Normans, London, Bristol and Norwich were the chief cities of the country. Its cathedral was commenced during the reign of Henry I by Hubert de Losinga. Its castle was built before this time. In more recent times Norwich has been renowned for its medical men. Sir Thomas Browne died in Norwich and a succession of skilful surgeons and of erudite physicians have followed. Norwich possesses a large and well equipped modern hospital, which, it may be remarked, affords a conspicuous example of what can be effected by means of good organization and common sense methods of management. A contributory scheme has been evolved by Dr. Samuel Barton and others whereby the financial affairs of the institution are being placed on a sound basis. A scheme for the amalgamation of the Norwich Hospital and the Norwich Eye Infirmary is about to be carried out. During the pas. quarter the number of in patients admitted to the Norwich Hospital was 93 discharged soldiers, against 103 in the same period last year, and 655 civilians, against 605. The number of operations performed was 694; 900 new patients were treated, and 450 accidents and casualties. In the corresponding period of last year these figures were 522, 791, and 1,650 respectively. As said before, the finances of the hospital are in a satisfactory condition, the donations for last year having amounted to £11,000, nearly double the amount of the previous year. At the present time about 360 parishes, 161 county firms and 450 city firms are contributing to Hospital Saturday and Sunday Fund. When the amalgamation with the Eye Infirmary becomes an accomplished fact it is proposed to utilize the present Eye Infirmary building, which is just across the road from the Norwich Hospital, as additional accommodation for nurses. The Norwich Eye Infirmary has now completed 100 years of work, having been founded in 1822.

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At a meeting of the section of tropical diseases and parasitology of the Royal Society of Medicine on April 3d last, Dr. M. Khalil read a paper on the earliest account of pellagra in Egypt. He revived a long forgotten publication by an Arabian physician, Ahmed Ibu Hassan El Rassidy, to whom credit was due for the earliest description of pellagra in Egypt, which had appeared in the first volume of *Diseases of the Skin*, Cairo, 1886. Pellagra, though first described in Spain in 1735 by Casal, who published his account in 1762 under the title of *Mal de la rosa*, was probably recognized so far back as 1578 in the health regulations of Milan, as *pellarella*. In Italy, Frapolli, in 1771, first named the disease "pelagra," synonymous with the "Alpine scurvy" described by Odoardi in 1776. Its recognition in France followed in 1818, in an account by Hameau of cases occurring in the plain of Arcachon, published in 1829. In Egypt, however, priority of description of the first occurrence of the disease there had hitherto been given in all textbooks to Pruner in his *Topographic Medicale du Caire*, in 1847, whereas that review had been preceded and possibly inspired by Ibu Hassan's original account published in the previous year. Dr. Khalil quoted in detail from the Arabian author's report of the disease, under its various synonyms, characterized by an erythematous condition of the skin, which might become scaly and bulbous, or by the development of nerve lesions without evidence of skin eruption. It was mentioned as common among the poor, and known as a poverty disease associated with the eating of maize, underfeeding, exposure to sun and insanitary conditions. The treatment advocated was mainly dietetic and included attention to improved hygiene and housing, and avoidance of sun exposure. It is interesting to note that although nothing was known concerning the rôle of vitamines at the time, yet pellagra was regarded as a deficiency disease.

Book Reviews

ELECTROTHERAPEUTICS.

The Principles of Electrotherapy and Their Practical Application. By W. J. Turrell, M.A., D.M., B.Ch. (Oxon.), D.M.R. and E. (Cantab.), Consulting Physician, Oxford County and City Mental Hospital; Physician in Charge of the Physiotherapy Department, Radcliffe Infirmary, Oxford, etc. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton. 1922. Pp. xi-276.

In this book the author has given a scientific consideration of the uses of the various electrical methods dealing with the actions of the different modalities with respect to their distinctive effects—thermic, electrolytic, and mechanical. He has given the subject a broad and scientific consideration, devoting comparatively little space to the description of apparatus. He has considered the subject especially from the point of view of therapeutic indications. In his consideration of the constant galvanic current the writer has shown by experiments that the older views concerning deep ionic medication which has been so widely held are physically impossible. He has recognized in this work the great value of the static current as a therapeutic measure, and in the chapters on therapeutics he has outlined definitely and scientifically the administrations of the modalities which are in accord with the views of the best authorities on the subject. Dr. Turrell has given the profession a work which will add very materially to the clarification of what has been a moot subject, clearly outlining and describing methods which are scientific and practical, basing his observations upon clinical experience. The work should be read by all the members of the profession who seek enlightenment on this subject of increasing importance and significance.

NONSPECIFIC THERAPY.

Protein Therapy and Nonspecific Resistance. By William F. Peterson, M.D., Associate in Pathology, University of Illinois, College of Medicine. With an Introduction by Joseph L. Miller, M.D., Professor of Medicine, Rush Medical College, University of Chicago. New York: The Macmillan Company, 1922. Pp. xvii-314.

This interesting volume is an attempt to summarize our present knowledge in this field from every angle. It includes an historical survey of the early steps in nonspecific therapy, as well as the more modern means employed in its application in chronic diseases as developed in the past seven years. The methods used at the bedside for therapeutic ends have been described in detail, not for the purpose of popularizing them, but, as the author states, "for the purpose of stimulating interest in a direction that seems to offer decided possibilities of advance." Nonspecific therapy deals largely with activation of potential forces of the organism which have been held in abeyance in overcoming disease processes. This is evidenced by the fact that there is an increase in the antibody formation (agglutinins, precipitins, opsonins), as well as fibrinogen and thrombokinase, as has been repeatedly observed. Whether these are brought about by vaccines heterologous in nature, secondary proteoses or various other proteins, such as milk, for example, makes little difference. The end result is the same—plasma activation. Naturally such methods should be effective, as the author suggests, so long as the body is in a fit state to respond to the stimulation.

Numerous and detailed examples are cited of diseases in which nonspecific therapy has been employed. Theories that have been advanced in explanation of the modus operandi of this type of therapy in the diseases under discussion, are fully analyzed. An appendix of the various proteins and their split products has been embodied at the end of the book, which is written in a very readable form. The abundant bibliography which will prove of great value to the immunologist as well as the student of general medicine, forms a notable feature of this very important as well as interesting monograph.

SUBMUCOUS RESECTIONS.

The Submucous Resection of the Nasal Septum. By W. Meddaugh Dunning, M.D., Consulting Otologist, Fordham Hospital; Consulting Otologist to Manhattan State Hospital; Consulting Laryngologist, Ossining City Hospital, etc. New York: Surgery Publishing Company, 1921. Pp. viii-97.

This booklet is a concise and greatly condensed compilation of practical points on the submucous resection of the nasal septum, and as such presents considerable interest to the active rhinologist. The value of the work is markedly enhanced by the fact that it embodies the results of the author's personal experience extending over a period of many years, embracing thousands of cases. We fully concur in his statement that the operation is to be recommended in but twenty to twenty-five per cent. of cases of septal deviation, and we wish this fact could be impressed on the minds of many of the younger rhinologists who often, in their eagerness to operate in all cases of septal deviation, show a veritable furor operativus. It is because of the latter that this useful operative procedure, which in properly selected cases gives brilliant results, is in danger of falling into disrepute. The many illustrations help greatly in elucidating the text.

TECHNIC OF DENTAL SURGERY.

Operative Dental Surgery. By J. B. Parfitt, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon and Lecturer on Operative Dental Surgery at the Dental School of Guy's Hospital. London: Edward Arnold & Co., 1921. Pp. 313.

In this attractive little volume, the author presents the substance of a short course of lectures delivered by him to the students of the Dental School of Guy's Hospital. In this work he has aimed to present a coherent body of technical methods of proved clinical value rather than to produce a treatise on dental surgery and pathology. A perusal of the work leads to the opinion that the author has succeeded in producing the kind of work he intended to produce. There are interesting and useful chapters on scaling, the control of the saliva, the operation of filling, pain saving in filling teeth, inlays, crowning, and many other practical subjects of a technical character. That there is nothing new in this book that will startle American dentists goes without saying, but it is filled with useful teaching matter, which will be of interest to the practical dentist.

PULMONARY COMPLICATIONS OF INFLUENZA.

Studies in Influenza and Its Pulmonary Complications. By D. Barty King, O. B. E., M. A., M. D. (Edin.), M. R. C. P. (Lond. and Edin.). Physician to the Royal Chest Hospital, London; Consulting and Examining Physician to the Church Army Sanatorium for Children Suffering from Pulmonary Tuberculosis, Fleet, Hants, etc. With Thirty-one Illustrations. New York: Paul B. Hoeber, 1922. Pp. 88.

This volume comprises three special studies of influenza; the first an outbreak among one hundred and fifty malarial patients; the second is a followup of the acute pulmonary complications, and the third, an account of the pandemic (1918-19) as it affected the nursing staff of the Horton War Hospital, London. All these studies are carefully made and deserve to rank among the best of numerous monographic studies of the pandemic and subsequent outbreaks in various quarters of the world.

DISEASES OF THE EYE.

Medical Ophthalmology. By R. Foster Moore, O. B. E., M. A., B. Ch. (Cantab.), F. R. C. S., Assistant Ophthalmic Surgeon, St. Bartholomew's Hospital; Surgeon, Moorfields Eye Hospital. With Eighty Illustrations. Philadelphia: P. Blakiston's Son & Co., 1922. Pp. viii-300.

In this little volume an attempt has been made to give a concise account of those pathological conditions of the eyes and their connections which, for the most part, are of interest in general medical diseases. On the whole it has been done extremely well, but the presentation is of necessity insufficient and incomplete. Such subjects as ocular tuberculosis, toxic amblyopia, vision and pituitary disease, the eyes and vitamine deficiency, ocular immunology, cannot be finished off in a paragraph or even a few pages. Still, Moore gives us a deal of interesting and valuable information, an excellent index, and very full reference notes to the literature on each topic. The chapters on arteriosclerosis, migraine, pituitary disease, and the neuropsychology of vision are particularly good.

DISEASES OF THE EAR.

Diagnostik und Therapie der Ohrenkrankheiten. Ein Hilfsbuch für den praktischen Arzt. Von Dr. Conrad Stein, Privatdozent für Ohrenheilkunde an der Wiener Universität. Bonn: A. Marcus & E. Weber's Verlag, 1922. Pp. viii-276.

The German reading general practitioner will find this an instructive and practical exposition of all he needs to know of diseases of the ear. Contrary to the general run of German textbooks this one is devoid of verbosity, and is written in an easily understandable and clear literary style. The author occupies himself exclusively with the diagnosis and therapy of various otological conditions, and for better reference arranges his material in accordance with the symptoms as encountered in practice, thus: Pain in the ear, its varieties due to diseases of the ear itself, to diseases of the neighboring organs, and to general systemic conditions; discharge from the ear in various acute and chronic conditions; defective hearing—a particularly interesting chapter—occurring in diseases of the external, middle and inner ear, and due to neuroses and cerebral conditions; dizziness and disturbances of equilibrium, fever, headache and so on. This is a serviceable plan, inasmuch as it aids the reader materially in orienting himself in a maze of symptoms that sometimes baffle the skill of even the trained aurist. The author has succeeded in the rather difficult task of definitely pointing out the limits beyond which the general practitioner should not go in treating ear cases, and the frequently repeated warnings in that respect form one of the interesting features of this instructive book.

INFANT FEEDING.

Infant Feeding. By Clifford G. Grulee, A. M., M. D., LL. D., Associate Professor and Acting Head of the Department of Pediatrics at Rush Medical College; Chief of Pediatric Staff, Presbyterian Hospital, etc. Fourth Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1922. Pp. 397.

It is five years since the appearance of the third edition of this book, and during that time there have been not a few events and many novelties, but not so many permanent advances in the field of pediatrics. All, however, good as well as bad, receive mention here, even the Nem system of von Pirquet. Wisely, however, the author does not devote much space to a description of that. While the title of the book is correct it is somewhat misleading. To the ordinary reader "infant feeding" calls up a picture of top milk, malt soup, flour balls, albumin milk, milk sugar, and a host of proprietary foods, and one wonders how a four hundred page book can be filled with such material. There is more than this, however, for the author discusses at great length the dietary management of spasmophilia, the nervous infant, rickets, eczema, and a number of other diseases and conditions of early life. The family physician and the young pediatrist will find Dr. Grulee's excellent treatise very helpful when puzzling cases of nutritional disorders in early life present themselves.

PROSTITUTION AND TUBERCULOSIS.

Prostitution und Tuberkulose. Klinische und socialmedizinische Untersuchungen. Von Dr. I. W. Samson, Berlin. Leipzig: Georg Thieme, 1921.

To review this monograph for a medical journal in the United States, where there is virtually no regulation of prostitution, would seem to be superfluous and yet one cannot but feel that the subject is an important one. In his preface the author expresses his regret that while professional prostitutes are carefully examined for venereal infections and can be forcibly retained until their recovery, the law does not permit any regulation in regard to tuberculosis, no matter how far advanced the disease may be. Concerning the frequency with which tuberculosis is found, the author quotes Spillman who maintains that about forty per cent. of the professional prostitutes in France die of tuberculosis.

Concerning the character of the infection the percentage among the tuberculous prostitutes does not differ materially from any others. The author gives 93.4 as afflicted with tuberculosis in the pulmonary form and 5.7 in other organs. The age at which the prostitute is seemingly in greatest danger of contracting tuberculosis is between twenty and twenty-five years. Out of 1,300 prostitutes examined, 368 were found tuberculous between the ages twenty and twenty-five who had plied their profession from

one to five years; eleven at the same age had plied their profession from five to ten years. Between the ages of twenty-five and thirty, 240 were found tuberculous who had plied their profession from one to five years, and 132 from five to ten years. From the statistics it would seem that the majority rarely lived longer than thirty-five years.

Interesting is the author's conclusions that the syphilitic invasion in the tuberculous prostitute does not necessarily influence the tuberculous process to any appreciable and unfavorable degree. He admits, however, that if there exists any favorable influence in such instances it can be explained in the cases of the professional prostitute by the fact that if she is found luetic she is immediately forced to undergo an antisyphilitic treatment and it may be that the more regulated mode of life and their previous occupation free from physical strain, accompanied by usually good nourishment, is the cause of the relatively mild run of the disease. Concerning alcoholism the author maintains that it should be considered the result rather than the cause of prostitution. The author's opinion concerning alcohol and tuberculosis is also interesting. He maintains that they run side by side without influencing each other. Concerning the smoking habit and its results on the tuberculous prostitute, he maintains that tuberculosis makes a more rapid progress in the girls who have been addicted to smoking than in those who have not. Concerning the sanitary supervision and control in general, the author concludes that in the interest of the common good, including the combat of tuberculosis, sanitary control, supervision, and care of the prostitute should not be done away with but improved according to modern conceptions.

THE STORY OF THE DRUG INDUSTRY.

The Story of Drugs. A Popular Exposition of Their Origin, Preparation, and Commercial Importance. By Henry C. Fuller. Illustrated with Photographs. New York: The Century Company, 1922. Pp. 358.

The tendency of the age toward intellectual democracy—even though some of us have to confess to a rather rude disappointment, in this postwar period, in the realization of our ideals of social, economic and political democracy—is demonstrated in the increasing publication of books on technical subjects, treated in popular form to satisfy the growing demand on the part of the layman for a deeper knowledge of scientific and professional subjects. The Story of Drugs, by Mr. Fuller, who, the publisher's jacket states, is on the staff of the Industrial Research Laboratories, Washington, D. C., is an addition to this ever increasing list of popular works on technical subjects. The author states that the book is not intended as a scientific treatise, but as a presentation, in plain, everyday terms and phraseology, for the lay person, of the story of the drug industry, based upon diversified nonscientific inquiries. First, the book tells what drugs are and where they originate; this is followed by an historical sketch of the development of the medicine making industry; and finally there is a detailed account of how medicines are made. An appendix—of doubtful value—is entitled The Family Medicine Chest, or Household Armamentarium. Matters of a controversial nature have been excluded.

The book has a profusion of interesting and attractive illustrations from photographs. In the section on patent medicines, the writer states that he proposes to draw a definite line between the old fashioned well established remedies, which have really benefitted many, and the sensationally advertised cures and medicines of a recognized pernicious nature. The book certainly gives the impression, however, that Mr. Fuller's attitude of receptivity toward the latter is very broad. We are rather shocked to discover Pinkham's vegetable compound and wine of cardui in the list for the family medicine chest. Also, Fuller declares that "the old line liquid remedies contained no more alcohol than is necessary to keep the medicinal agents in solution and prevent spoilage . . ." this in the face of the definite establishment of a large alcoholic content in the case of the original peruna, wine of cardui, vinol and other patent remedies.

But in spite of this and a number of inaccuracies, the book contains much of interest and instruction for the layman.

SOLUTIONS.

Solutions. In Ten Lessons. A Manual for Use in Training Schools for Nurses. By Elsie M. Smith, R. N., Superintendent of Nurses, Fresno County Hospital, Fresno, Cal. Second Revised Edition. St. Louis: C. V. Mosby Company, 1922. Pp. 59.

The first edition appeared in 1919 and its exhaustion has led to a second edition. There is no change in the subject matter save in the order of chapters. Among the topics dealt with are hypodermic medication, approximate equivalents and saturation, the use of decimals and the metric system in general, stock and percentage solutions, pure drug solutions, fractional ratios, proportional solutions, equivalents of drops and grams, and drop fractions.

OBSOLETE PSYCHIATRY.

Advanced Suggestion. (*Neuroinduction.*) By Haydn Brown, L. R. C. P., etc. (Edin.); Fellow of the Royal Society of Medicine. Second Edition. New York: William Wood & Co., 1922. Pp. xviii-402.

There are many good points in this book of Brown's but he finally gets into such a muddle when he discusses treatment that the book from a practical point of view is worthless. His entire biological, psychological concept is in need of careful revision, for he has clung so tenaciously to obsolete ideas and methds and disregarded modern dynamic psychopathology so completely, that his present presentation is quite hopeless. Brown is so certain about so many things that are not so.

PROTOZOA.

An Introduction to the Study of the Protozoa. With Special Reference to the Parasitic Forms. By E. A. Minchin, M. A., Ph. D., F. R. S., Professor of Protozöology in the University of London. Illustrated. New York: Longmans, Green & Co.; London: Edward Arnold, 1922. Pp. xi-517.

This book, while not intended primarily for the medical man, will find favor among many who are interested in the biological and morphological aspects of protozoa. The presentation stands midway between the purely theoretical and the purely practical. The literature has been freely consulted and quoted. It is a careful piece of work and it is to be regretted that the printing is not of a better quality.

MEDICAL TREATMENT.

The Principles of Medical Treatment. By GEORGE CHEEVER SHATTUCK, M. D., A. M., Assistant Professor of Tropical Medicine, Harvard Medical School. Fifth Revised Edition, with Contributions by Members of the Staff of the Massachusetts General Hospital. Boston: W. M. Leonard, Inc., 1921. Pp. 309.

Of this well known volume it is only necessary to say that to the fifth edition the following contributions have been added: Tuberculosis, by John B. Hawes, 2d; Acute Infectious Diseases Most Common in Childhood, by Edwin H. Place; Influenza, by Gerald Blake; Diabetes Mellitus, by Benjamin H. Ragle; Serum Treatment of Pneumonia, by Henry M. Thomas, Jr. All these contributors are members of the staff of the Massachusetts General Hospital. Dr. Chattuck expresses a hope that the book in future editions, will continue to reflect the hospital's clinical activities.

ENDOCRINOLOGY IN THE STUDY OF PSYCHIATRICAL CASES.

A Psychoanalytic Study of Psychoses with Endocrinoses. By DUDLEY WARD FAY, Ph.D. Nervous and Mental Disease Monograph Series No. 33. New York and Washington: Nervous and Mental Disease Publishing Company, 1922. Pp. viii-122.

This, the thirty-third monograph of the series, is devoted to a series of case histories wherein psychic and endocrinological disorders appear in the same patient. An attempt is made to prove the interrelationship of the disorders. It is scarcely a fair test inasmuch as the material handled presented marked and combined pathological conditions. It contains certain suggestions of value but on the whole lacks a concrete or conclusive presentation. It would seem that a task of this kind should be done far more thoroughly but undoubtedly the limitations of doing the work in an institution limited its scope.

PSYCHOLOGY IN FICTION.

Life and Death of Harriet Frean. By MAY SINCLAIR. New York: The Macmillan Company, 1922. Pp. 133.

The Combined Maze. By MAY SINCLAIR, Author of *The Divine Fire.* New York: The Macmillan Company, 1922. Pp. 394.

The kaleidoscope of human lives that Miss Sinclair illuminates is truly amazing and never ending. Intricate yet inevitable patterns shift and melt into other colorful situations before our eyes. She has always been a painter of reality, her stories enhanced by those strange quirks of fate that begin and end with the individual, mould him and wreck him on the shoals where his life meets other lives. Miss Sinclair's latest novel is a miracle of condensed, poignant achievement. It thrusts true, so deadly true that it is almost painful to the majority of readers. Harriett Frean was brought up according to the tinselled and drossy Golden Rule of "Behaving Beautifully." The modern generation is only just beginning to venture into the outer darkness of personality and individuality after countless decades of obedience to these precepts. Needless to say Harriett Frean starves mentally and psychically, patterns her entire life after her mother's neurotic, repressed life. She never allows herself to live her own life; it might not conform with what was expected! Even her death is provided for, not individual, but the death her mother died. The relentless sweep of the story is too powerful for comfort. It is the stark naked truth, blinding in the fierceness of its light.

The new edition of *The Combined Maze*, a novel in her earlier style, tells the story of a love life gone astray. It is the history of a commonplace trio, somehow touched by romance and beauty in the midst of sordid endurance. It also rings true with that extraordinary all-knowingness of Miss Sinclair's. It is a delightful and pitiful tale of happiness frustrated by the demon of public opinion.

DANISH LITERATURE.

Guest the One-Eyed. Translated from the Danish of Gunnar Gunnarsson, by W. W. WORSTER. New York: Alfred A. Knopf, 1922. Pp. 340.

The days of Viking prowess, so dear to the imaginative reader discontented with humdrum present existence, fade before this powerful and romantic drama of Iceland of today. The secret of Gunnarsson's writing, like that of so many other Scandinavians, seems to be his familiarity with the human heart, whether beating in antiquity or now. His heroes live and are forever clothed for us in actuality.

Guest the One-Eyed is the story of three generations of Icelanders, a keen survey of psychological conditions, relations between landowner and peasant, a fragment of the life of the island. There is uprightness and deceit, there is tragedy. Large and small the conflicts of an average human life crop up, are bested, or produce the inevitable changes. Gunnarsson has given to this book the same spirited fire that made *The Sworn Brothers* notable. He has laid the glamor of romance over everyday life, just as he gave the flavor of reality to life in ancient times.

Medicoliterary Notes.

Now that "hiking time" is here again, the physician interested in attractive walks and Sunday outings will do well to remember the very interesting and attractive pamphlet, *Palisades Interstate Park*, published last year by a member of the medical profession, Dr. Robert L. Dickinson. It is by far the best guide to the Hudson River region north of New York and contains all kinds of interesting and useful information about the Palisades. The booklet is illustrated by clever sketches by the author, and with clear and accurate maps showing all roads, trails, ferries, etc. The pamphlet may be purchased from the American Geographical Society, Broadway and 156th Street.

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Irrespective of whether or not *The Hairy Ape* deserved the criticism it has recently received, the play is certainly one of Eugene O'Neill's best, although it seems inferior to *The Emperor Jones* both as to dramatic form and production. It is too full of repetition, and Louis Wolheim, who plays the title rôle, is by no means a great actor. Yet from a social and ethical viewpoint, it is probably the most significant of the O'Neill plays. *The Hairy*

Ape, a brutish, illiterate stoker, symbolizes the "underpinning" of the industrial structure on which the whole of modern society rests—in fact, the play is all pure symbolism—and the action develops the idea of the enormous danger in society's present willful disregard and neglect of this low and unthinking, because neglected, laboring class.

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Broom is the curious name of a periodical published in Rome by Americans in Italy. The April number contains an interesting article by Jean Epstein entitled The New Conditions of Literary Phenomena. The writer says: "Life is so cerebral and intense that it is logical to foresee signs of intellectual fatigue. It is not a question of malady but a modification of the most sensitive organism, because the commanding organism, the brain. . . . A light fatigue, this health colored with fatigue, universal in the measure that civilization is universal, not pathological, since it is not exceptional in the new state of health. . . . But such as it is, it is clearly indicated in the civilized literatures of modern countries."

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Colonel Henry Beeuwkes, M. D., now with the Medical Division of the American Relief Administration, reports that codliver oil tanks are being circulated through Moscow, stopping in front of nurseries and children's homes. The children shout with glee when they see the tanks coming, and those sick in hospitals beg for the oil. Many suffering from malnutrition and skin and scalp diseases have already been greatly benefited.

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The *North American Review* for May contains a clever and amusing essay on heredity called Our Clamoring Ancestors, by Agnes Louise Dean. In the same number is an article on Mental Tests for Immigrants, by Dr. Arthur Sweeney, professor of medical jurisprudence at the University of Minnesota. The writer advocates most strongly the application to immigrants of the psychological tests used by the army during the war.

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Hearst's International Magazine for May contains a translation of a hitherto unpublished story of Guy de Maupassant, the manuscript of which was recently discovered among the personal papers of the late French author. The title is The Story of a Wise Man, and the tale is a curious and interesting study in psychopathology which, to the psychoanalyst, doubtless throws much light upon the mental disease that afflicted De Maupassant's last years.

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In *Mental Hygiene* for April is a most interesting and illuminating article by the late Dr. Pearce Bailey on the Mental Pathology of Races in the United States, reprinted from the *Archives of Neurology and Psychiatry* for February. The paper contains a number of very valuable statistical tables.

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Still another theory about Hamlet! James Westfall Thompson, in the May number of the *North American Review*, argues that Shakespeare in Hamlet was specifically aiming at the notorious relations between Queen Elizabeth and Robert Dudley, Earl of Leicester, and that the play revolves around the mysterious death of Leicester's first wife, Amy Robsart. This new point of view is interesting as compared with the revival last winter in a magnificent screen version of the play by one of Denmark's most noted actresses, Alta Nielsen, of the legendary theory that Hamlet was really a woman, whose sex was concealed by her parents so that succession to the throne might be assured.

New Publications Received.

BISEXUAL LOVE. By W. Stekel. Boston: Richard G. Badger, 1922. Pp. viii-359.

DISGUISE OF LOVE. Psychoanalytical Sketches. By W. Stekel. New York: Moffat, Yard & Co., 1922. Pp. vi-171.

RADIUM THERAPY. By Frank Edward Simpson, A. B., M. D. St. Louis: C. V. Mosby Company, 1922. Pp. 391.

THE PLACE OF VERSION IN OBSTETRICS. By Irving W. Potter, M. D. St. Louis: C. V. Mosby Company, 1922. Pp. 138.

L'ENCEPHALITE LETHARGIQUE. Par le Pr. Achard. Avec 15 figures. Paris: Librairie J. B. Balliere et Fils, 1921. Pp. 324.

MEDICAL OPHTHALMOLOGY. By R. Foster Moore, O. B. E., M. A. Philadelphia: P. Blakiston's Son & Co., 1922. Pp. viii-300.

MANAGEMENT OF THE SICK INFANT. By Langley Porter, B. S., M. D., and William E. Carter, M. D. St. Louis: C. V. Mosby Company, 1922. Pp. 654.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS. Volume XIV. Baltimore: William & Wilkins Company. Pp. xi-267.

UNITED STATES LIFE TABLES, 1980, 1901, 1910, and 1901-1910. Prepared by James W. Glover. Washington: Government Printing Office, 1921. Pp. 496.

OLD EUROPE'S SUICIDE, OR THE BUILDING OF THE PYRAMID OF ERRORS. By Brigadier General Christopher Birdwood Thomson. New York: Thomas Seltzer, 1922. Pp. xii-192.

A PSYCHOANALYTIC STUDY OF PSYCHOSES WITH ENDOCRINES. By Dudley Ward Fay, Ph. D.. New York and Washington: Nervous and Mental Disease Publishing Company, 1922. Pp. viii-122.

ZUR THERAPIE DES KARZINOMES MIT RÖNTGENSTRAHLEN. Vorlesungen über di physikalischen Grundlagen der Tiefentherapie. Von Prof. Dr. Fr. Dessauer. Mit 30 Textfiguren. Dresden und Leipzig: Verlag von Theodor Steinkopf, 1922. Pp. 70.

MANUAL OF OBSTETRICS. By John Osborn Polak, M.Sc., M. D. Second Edition, Containing a Special Section on Endocrinology. New York: Physicians and Surgeons Book Company, 1922. Pp. xix-488.

AN ESSAY ON THE PHYSIOLOGY OF MIND. An Interpretation Based on Biological, Morphological, Physical, and Chemical Considerations. By Francis X. Dercum, A. M., M. D., Ph. D. Philadelphia and London: W. B. Saunders Company, 1922. Pp. 150.

THE OXFORD MEDICINE. By Various Authors. Edited by Henry A. Christian, A. M., M. D. In Six Volumes. Illustrated. Volume V: Infectious Diseases (continued) and Diseases Due to Animal Parasites. Volume VI: Diseases of the Central Nervous System. Under the Editorial Supervision of Sir James Purves Stewart. New York: Oxford University Press, 1921. Pp. xvii-1099.

Practical Therapeutics

AN ESOPHAGEAL DILATOR.

By J. Buckstein, M. D.,
New York.

This apparatus consists of the following four essential parts.

Perforated end piece.—This is a small, rounded end piece, with two small openings, through which a thread may be passed, along which the passage of the dilator may be guided through the cardiac opening. Where marked stenosis at the cardia with secondary dilatation of the esophagus exists, the unguided dilator may be pushed to one side of the cardiac opening and fail to gain entrance into the stenosed or spastically contracted area. Under such conditions it is best for the patient to swallow a string for a sufficient length so that after gaining entrance into the stomach, it passes beyond it well into the jejunum where it becomes anchored. The end of the string extending from the mouth is then passed through the openings in part I, and with the

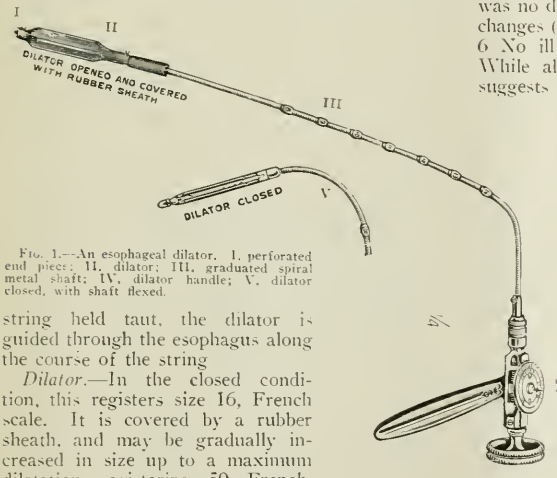

Fig. 1.—An esophageal dilator. I, perforated end piece; II, dilator; III, graduated spiral metal shaft; IV, dilator handle; V, dilator closed, with shaft flexed.

string held taut, the dilator is guided through the esophagus along the course of the string

Dilator.—In the closed condition, this registers size 16, French scale. It is covered by a rubber sheath, and may be gradually increased in size up to a maximum dilatation registering 50 French.

Shaft.—This is made of spiral metal. With the exception of the last few inches of the shaft which are at an angle to the main body, this shaft is flexible to a high degree as indicated by figure V in the accompanying illustration. There is an extreme advantage in this ready flexibility of the shaft, as it enables the instrument to be passed through the esophagus with maximum ease and comfort to the patient. In this respect, it has an unquestioned advantage over those instruments in which the shaft is rigid and unyielding. In addition the shaft is graduated, so that the distance of the stenosed or spastically contracted area from the teeth can be determined.

Dilator handle.—This is based on the model of the Kohleman dilator handle and exact registrations of the increase in size of the dilator can be determined. In this manner a record may be kept of the progress in the degree of dilatation obtainable, as treatment is continued.

The advantage of the apparatus lies in the combination of features, as outlined above, in a single instrument.

1 West Eighty-fifth Street.

Treatment of Malignant Disease by a Diet Free from Fat Soluble Vitamine A.—Stanley Wyard (*Lancet, April* 29, 1922) tried a diet free from fat soluble vitamine A in twenty-one malignancies for three months or more and drew the following conclusions: 1. There was no demonstrable effect on the growth and evolution of the tumor. 2. The general condition of the patient showed no unfavorable change attributable to the diet. 3. Whether the diet affected the amount of pain or not is doubtful—usually not. 4. All the blood counts were within normal limits of variation and there was no diminution of the lymphocytes. 5. No bony changes (other than secondary deposits) were found. 6 No ill effects of any kind were demonstrable. While all these findings are negative, the author suggests trying these experiments on patients in whom the growth, while small and not extensively infiltrating, is yet inoperable because of its location; or when the growth is small and in itself inoperable but operation is refused or the general condition forbids it.

A Review of the Work Done by the Glasgow School on the Etiology of Rickets.—Leonard Findlay (*Lancet*, April 29, 1922) asserts that defective hygiene in the widest sense of the term is the most important determining factor in the causation of rickets: confinement and lack of exercise were experimentally proved important factors in animals and infants. Investigation of the housing conditions showed that the rachitic cases suffered from a reduced air space and poor maternal care. The diet and the family income played a very minor part; the socalled antirachitic vitamine fat soluble A has no bearing on the development of rickets. Infection is not responsible. The experiments with fat poor and fat rich diets do not show uniform results: many infants on a fat poor diet never develop rickets, while some of the severest cases occurred with fat rich diets; fat digestion and absorption are as good in rickets as in health. Sunshine and fresh air cured many cases of rickets without a change in diet. Codliver oil and phosphorus do not hasten the healing. Ultraviolet rays produced the most rapid improvement. Codliver oil shows healing effects in the röntgenogram but none clinically. Calcium starvation does not produce the disease. Confinement and lack of exercise seem to play the most important part.

The Use of Phenol Red as an Indicator for Milk and Sugar Media.—H. C. Brown (*Lancet*, April 29, 1922) recommends phenol red milk as a substitute for litmus milk as an indicator for acid or alkali production in bacterial cultures. One part of condensed milk is added to four parts of tap water; to five c. c. of this mixture a few drops of phenol red solution are added and then N/10 sodium hydrate solution is run in until the mixture becomes brick red; the calculated amount of N/1 sodium hydrate solution is then added to the diluted milk and sufficient saturated aqueous solution of phenol red to make the milk a vivid brick red. Care must be taken to stop the addition of alkali when the brick red color is reached, corresponding to a pH 7.5. The subsequent production of acid or alkali by any organism in this medium will be clearly shown. The medium is then tubed and steamed for twenty minutes on three successive days. This method is more sensitive than litmus and an initial acidity which is followed by alkalinity, as with Bacillus paratyphosus B is clearly shown. The same applies to the use of sugar media.

Mercurial and Salvarsan Dermatitis Appearing During the Course of Antiluetic Treatment.—Josef Klaar (*Kiener klinische Wochenschrift*, March 23 and 30, 1922) reports a series of cases with necropsies, in which the cause of death was probably cardiac insufficiency, although the mechanism of the origin of the severe changes in the skin are unexplainable. Preexisting lesions of the liver or large doses of salvarsan could be excluded as the cause of the development of exanthems and the intervals of treatment were sufficiently long. Usually the dermatitis appeared without premonitory symptoms and it must be explained by a specific reaction power of the organism. The idiosyncrasy is usually transient. During the dermatitis, the Wassermann reaction became negative or weakly positive in most of the cases and the luetic changes in the skin and mucosa disappeared entirely; the course of the syphilis was also favorably influenced with few exceptions. The dermatitis seems to occur more often in females than in males.

Anaphylaxis and the Thyroid Gland.—L. Kepinow and A. Lanzenberg (*Presse médicale*, May 10, 1922) refer to experiments in which they had shown that completely thyroidectomized guineapigs were able to receive injections of horse serum with impunity, without presenting any anaphylactic shock. These earlier experiments had led to the supposition that the thyroid gland was concerned in the preparation of the sensitizing substance. More recently they tried to verify this supposition by a study of passive anaphylaxis in thyroidectomized animals. The conclusions reached are that thyroidectomized animals can be passively sensitized; they present the manifestations of anaphylactic shock when, after having received serum from sensitized unoperated animals, they are given a second injection. Thyroidectomized animals do not have in their serum, after the preparatory injections, the substance which confers passive anaphylaxis to animals, whether unoperated or thyroidectomized. The thyroid gland thus appears to the authors to play a rôle of prime importance in the phenomenon of anaphylaxis.

Some Unusual Causes of Difficulty of Micturition Due to Abnormal Conditions at the Vesical Neck.—W. K. Irwin (*Lancet*, April 29, 1922) reports three unusual causes of difficulty due to narrowing of the urethral canal at the vesical neck, giving symptoms of enlarged prostate without actual enlargement, difficult to differentiate in diagnosis. 1. In the presence of a small fibrous prostate the symptoms are very similar to those of glandular enlargement, but the difficulty of micturition is greater, resembling a malignancy. The length of the urethra is diminished. On rectal examination the gland is found very small or impalpable. Scirrhous carcinoma is differentiated by the uniform smoothness and the absence of metastases in the later stages. The condition is usually too far advanced to be aided by the removal of the cause, such as stone, tuberculosis or abscess. Large metal bougies give only temporary relief and perineal prostatectomy or prostatotomy may be tried. 2. Congenital valves of the prostatic urethra are characterized by difficult micturition from infancy, resulting in retention with overflow which may be mistaken for enuresis. The treatment is dilatation with bougies, internal urethrotomy, or removal of the valve with the cautery, scissors, or best with the finger by the suprapubic route. 3. Spasm of the internal sphincter is usually described as atony of the bladder in healthy young males. There is no history of gonorrhea, no spinal disease and no abnormality of the prostate. A sound may find obstruction at the internal sphincter. The treatment consists of passing metal bougies, followed by dilatation with the Kollmann dilator up to 40 to 45.

Blood Viscosity in Morphinism.—P. Sollier (*Bulletin de l'Académie de médecine*, April 18, 1922) states that whereas, during the state of intoxication, the blood shows little in the way of morphological and structural changes, during withdrawal of the drug there is a marked increase in the red cell count as well as the leucocytes. In the first few days after withdrawal there is a polymorphonuclear leucocytosis and disappearance of the eosinophiles, while about the fifteenth there is a lymphocytosis with eosinophilia and the appearance of large macrophages and myelocytes. Meanwhile there is increased resistance of the red cells and reduced resistance of the whites. Coagulation is more rapid than normal, and there is deeper coloring of the red cells, together with the appearance of macrocytes and poikilocytes. The leucocytes present numerous changes in the nuclei and protoplasm, amounting in some instances to complete degeneration of the cell. Only about the fortieth day after withdrawal do the cell count and cell resistance approach the normal and the changes in the leucocytes disappear. The viscosity of the entire blood is increased during the period of intoxication, this increase being due to increased cellular viscosity, the viscosity of the blood plasma remaining normal. During the period of withdrawal, the viscosity increases further, again involving mainly the blood cells. By the fifteenth or twentieth day after withdrawal the viscosity approaches normal, and it reaches normal from the thirtieth to the fortieth day. Purgation and diarrhea during withdrawal do not account for the high vis-

cosity, for the latter is due to the cells and not the plasma. Further, even the increased cell count is not enough to account for the high viscosity; there must be some other factor, which is probably the morphological and structural changes in the cells during withdrawal, the cells rubbing together much more than usual on account of their being distorted and irregular in outline. All these findings show that the clinical manifestations in morphine withdrawal are due to actual organic causes, the origin of which is somewhat similar to that in infectious diseases, and that the mental abstinence symptoms are the result of organic disturbances and not, as some still think, of a disordered mental habitus. They also suggest a possible danger in the use of hypnotics and sedatives during the period of withdrawal.

Autohemotherapy in Protracted Infectious Diseases.—F. Ramond (*Bulletins at mémoires de la Société médicale des hôpitaux de Paris*, April 13, 1922) at first based this treatment on the hypothesis that antigens in the blood cause the formation of antibodies with greater difficulty in the blood stream than they do in the subcutaneous cellular tissues. The original procedure was to withdraw twenty to forty mils of blood from a vein at the elbow and reinject it at once into the neighboring cellular tissue. Experience showed, however, that two mils was a sufficient dose, and the mode of action appears more likely to be that of a colloidoclasic shock. The treatment does not accomplish much in the earlier stages of acute infections nor in the decline in severe streptococcic or other septicemias, but in infections of a more dragging type, best exemplified in protracted typhoid fever, it generally induces a drop in the temperature and shortens convalescence by at least ten to fifteen days. If the temperature fails to drop within forty-eight hours, one more injection may be given. As a rule, sweating supervenes in twelve to twenty-four hours after the first injection; when marked, it is regularly followed by defervescence, which begins at some time between the twenty-fourth and the forty-eighth hour. Polyuria also occurs, the condition thus showing all the features of the true crisis of infectious diseases as described by Chauffard.

Addison's Disease Treated by Suprarenal Grafting.—Hurst, Tanner and Osman (*Proceedings of the Royal Society of Medicine*, May, 1922) report the case of a motor driver aged forty-one years who was admitted into Guy's Hospital for muscular weakness and pigmentation. He was soon exhausted on walking, and recently had begun to vomit after meals. The skin was pigmented all over the body, and around the nipples and genitals was almost black. There were no signs of active or healed tuberculosis, although the radiographic appearances were suggestive of old phthisis. Treatment with hydrochloric acid by mouth, suprarenal extract in large doses, and injections of one in one thousand adrenalin hydrochloride solution caused no obvious improvement. At the end of four months the systolic blood pressure had fallen to 75 mm. Hg. A suprarenal gland from a man who had just died from an accident was grafted into the subcutaneous tissue of the inguinal region. The blood pressure remained as before. About two weeks later a graft from a fetus just after death was grafted into the substance of the left testicle. The patient had been getting rapidly more anemic, and a month after the second operation the hemoglobin was but forty-three per cent. and the red cells 2,070,000. The hemoglobin continued to fall until, nearly a month after the second operation, it was twenty-eight per cent. A blood transfusion was then performed and the patient again given hydrochloric acid and iron by the mouth. He began slowly to improve, and one month later the hemoglobin was forty per cent., and the systolic pressure had risen to 95 mm. Hg. He was discharged from the hospital and returned home to attend to private affairs. Seven months later, he was feeling much better. He had not vomited for several months, but the pigmentation seemed unaltered. The systolic pressure had risen to 115 mm. Hg, and the hemoglobin percentage was 80. The suprarenal graft was still palpable, the testicle having partially atrophied.

Colloidoclasia and the Endocrine Glands.—Widal, Abrami and De Gennes (*Presse médicale*, May 6, 1922) assert that, aside from antianaphylactic procedures such as specific or nonspecific desensitization and the administration of atropine or adrenalin, there are some cases of asthma in which, anaphylaxis having developed in conjunction with endocrine disturbances, gland therapy calculated to make good deficiencies of endocrine function will so modify the system as to make it refractory to the occurrence of anaphylactic phenomena. They report in great detail the case of a woman aged forty years in whom asthma, from which she had suffered for twenty-three years, was plainly modified as to its course by variations in the functions of the ovaries and the thyroid gland. From the age of thirty years, the woman had begun to observe that certain climates made her asthma worse and that she was becoming sensitive to emanations from roses and certain other odors. When the menopause set in, at the age of thirty-seven, her severe asthmatic attacks, which had been growing increasingly frequent, completely ceased. Her more constant, slight dyspnea persisted, but was present only in the mornings, on awakening, and was accompanied by paroxysmal cough with free expectoration, frequently bloodstreaked. Furthermore, typical manifestations of myxedema set in. At the same time, sensitization to certain odoriferous agencies was still present, smelling a bouquet of roses regularly bringing on dyspnea, which began in one or two minutes and lasting several minutes; these attacks were far less violent than they had been before the menopause. Atropine prevented them, but adrenalin did not. The patient was now given 0.2 gram of thyroid gland for ten days, and then 0.3 gram. Within a few days after the increase of dosage the manifestations of myxedema began to recede, and the morning dyspnea almost entirely disappeared. In ten days the patient could smell roses without the least inconvenience. Subsequent interruption of the thyroid treatment and its resumption three successive times proved definitely that the effects witnessed were due to the thyroid. The sensitiveness to roses regularly returned when the thyroid was stopped, and at times there were asthmatic attacks such as the patient had had previous to her menopause.

Neosilversalvarsan.—K. Ullmann (*Wiener klinische Wochenshrift*, April 6, 1922) finds the silversalvarsan and neosilversalvarsan are excellent antiluetic remedies in all stages of the disease. They act powerfully and quickly and occasionally even more so than neosalvarsan, especially on the spirochetes in the chancre, the fresh lesions of secondary lues, periosteal swellings, older gummatous infiltrations, the symptom complex of hereditary lues, the luetic fetus, and occasionally on the neurorecidives of the brain, ear, keratitis and other obstinate clinical manifestations. In early latent cases, their effect on the Wassermann reaction corresponds to that of the combined mercury salvarsan treatment and it lasts a long time. Whether the silversalvarsans have any special advantage over neosalvarsan in nervous syphilis has not as yet been definitely established, but seems likely; at any rate they seem to exert a greater absorptive effect than the combined mercurial treatment. The occasionally appearing slight neurorecidives should be considered as signs of a powerful effect and not as a contraindication for the preparations. The newer preparations also show less local tissue reaction and less injurious effects on the kidney. Vasomotor irritation does not occur with the proper solution and dosage of neosilversalvarsan. The lasting effect upon the disappearance of the Wassermann reaction, even without the use of mercury, is probably due to the chemotherapeutic spirillicidal effect of the silver. The facts that the solubility relationships of the neosilversalvarsan are in no way inferior to that of neosalvarsan and that the decomposition of the solutions on exposure to air is less, make the newer preparations therapeutically equivalent if not superior to neosalvarsan. Up to the present time, experience and theory render these preparations equivalent to the other salvarsans. If mercury is not well tolerated or contraindicated and if the older salvarsan preparations are inadequate, neosilversalvarsan is indicated.

A Simple and Economic Method of Staining Blood.—J. Hickl and N. Jagic (*Wiener klinische Wochenschrift*, April 6, 1922) describe a staining technic which differentiates the various forms of leucocytes. A 1.5 per cent. stock solution of toluidin blue (Grübler) is prepared with distilled water, which keeps for a long time and should be filtered occasionally. For use, the stock solution is diluted 1:10, which also keeps for a long time. The blood smear is prepared in the usual way and dried in the air protected from dust for twelve to twenty-four hours. A drop of the toluidin solution is placed on the smear and covered with a coverglass, the smear face down and avoiding air bubbles. The smear is then examined microscopically while wet or after drying in the air. The erythrocytes are easily recognized by their contour. The leucocytes show nuclei colored blue and with a distinct structure, the granules in the protoplasm and the chromatin markings appearing distinct. The polymorphonuclear neutrophiles show distinct segmentation of the nuclei, a fact useful in Arneth's count. The nuclei of the lymphocytes, monocytes and myelocytes show their morphological characteristics. The protoplasm of the leucocytes shows all the details; this applies also to the basophiles, but not to the granulations. The strongly basophile protoplasm of the myelocytes and irritation forms is recognizable by the dark blue staining; the myelocytes show a lighter protoplasm, whereas the ripe polymorphonuclears have a lightly colored protoplasm. The same applies also to the lymphocytes and monocytes; the protoplasm of the latter appears darker than that of the polymorphonuclears. The granules of the myelocytes and polymorphonuclears appear distinctly colored. The eosinophile granules are recognizable by the marked refraction and their size. The basophile granules of the mast cells appear dark blue. The nuclei of the erythroblasts are also dark blue. Blood platelets appear as small blue structures. This stain is applicable to Fonio's technic and also for malarial plasmodia. If thick smears are desired, the solution is applied two hours after the preparation of the slide, whereupon hemolysis results after a few minutes. The smear is then washed with distilled water and again stained with a more dilute toluidin solution (1:20). The stain is allowed to run off and the specimen is dried in the air. This technic shows up more leucocytes to the single visual field than the former one and is useful for rapid orientation.

Action of the Commoner Ecbolics in the First Stage of Labor.—M. Pierce Rucker (*American Journal of Obstetrics and Gynecology*, February, 1922) reports observations on twenty-one patients with a Voörhees bag in the cervix during the first stage of labor. The stem of the bag was connected with a mercury manometer and graphic records of the uterine contractions thus obtained. The effects of various drugs on the contractions in the first stage of labor were tested. Hyoscine in doses of one two hundredth to one one hundredth grain seemed to exert a moderate but rather constant ecbolic action. The observations confirmed the clinical impression that the first stage of labor is usually shortened by the use of scopolamine or hyoscine. Among the six patients to whom quinine was given, usually orally in the dose of ten grains of the sulphate, the action was variable; sometimes it markedly strengthened the normal rhythmic contractions, while sometimes it showed no action whatever. In the single instance in which one thirtieth grain of strychnine was given hypodermically there was a moderate increase in both the strength and duration of the pains. Castor oil, two ounces orally in one case, seemed to have no effect. A five minim dose of ergotol hypodermically in one case was followed by a slight increase in the rapidity of the pains, with a lessening of their strength and duration. Another patient at term was given ten minims of ergotol by mouth with no appreciable effect; possibly the specimen of ergotol used was inert. In the three cases in which pituitrin was used in doses of from two to seven and one half minims, an incomplete tetanus of the uterus followed in from two to four minutes and continued from nine to thirty-five minutes. The most marked effect followed the use of two minims of pituitrin in a patient at term; it did not last as long, however, as when seven and one half minims were used in a case of premature labor. The prolonged incomplete tetanus following the administration of pituitrin in these patients appears to explain the many disasters that have followed its use.

A New Method of Injecting Tuberculin in Disseminated Tuberculosis of the Skin.—W. Böhme (*Wiener klinische Wochenschrift*, February 23, 1922) asserts that the Ponndorf method of inoculating the skin by the inunction of the antigenic material into the uppermost layers of the skin is entirely different from every other method of its application. The skin inducts the tuberculin into the circulation and the tuberculous foci in a rational and neutralized form, without diminishing its therapeutic effect and even enhancing it. The skin acts like a filter. Two substances, A and B were used for inoculating purposes: A contains all the specific antigenic substances, such as the metabolic products developed in the nutrient medium from growth of the bacillus as well as the stored up bacillary groups of substances in concentrated form derived from autolysis by the avoidance of chemical or thermic uncontrollable manipulations; B represents the inoculating substance enriched by specific antigens of the excitant of mixed infections (streptococci, staphylococci, pneumococci, etc.). The dosage depends upon the number of the inoculation scratches, the size of the field of inoculation, the number of drops of the material used and upon the interval and total number of the inoculations. Marked curative effects are noted in the cases of preclinical tuberculosis, the groups of larval tuberculosis physically not recognized as tuberculous, the phenomena of tuberculous intoxication, and also in the heterogeneous conditions not directly related to tuberculous phenomena, such as erysipelas, certain neuroses, juvenile deafness, and rheumatism. The Ponndorf method of treatment has no relationship to proteotherapy. As ninety-eight to one hundred per cent. of all people show at least histological evidence of tuberculosis, the secondary nonspecific effect seen in nonspecific groups of diseases is only possible if based upon a strictly specific and tuberculous reaction.

Specific Treatment of Tuberculosis of the Eye by the General Practitioner.—Eduard Nowak (*Wiener klinische Wochenschrift*, March 2, 1922) asserts that before beginning the treatment the patient should undergo a complete and thorough physical examination and if only a latent tuberculous focus is found, with nothing else to account for the condition, tuberculin treatment is indicated. With negative findings, tests were made with O. T. to determine the presence of tuberculosis; this, however, is contraindicated with fever, cardiac and renal disease and in women shortly before and after the menses. The most frequent reaction is the puncture reaction, showing circumscribed redness and wheal formation after twelve to thirty hours, with a less frequently associated general reaction; focal reactions in the eye are the rarest. The treatment itself is begun with B. E. 0.001 mg., increased at the cost of half this dose in nonreacting cases, and in cases with marked reaction to O. T., by one fifth to one third. The dosage 0.001 mg. to 0.1 mg. is given subcutaneously, every two days and then 1.0 mg. every three days up to 10 mg. every four days. With larger doses, the intervals are still greater and the increases are only by one fifth to one third, but individualization is necessary. The aim is to reach the maximum dosage, if possible 0.1 to 1.0 gm. pure B. E. (absolute maximum dosage), but less may be sufficient (individual maximum dosage). The less the reaction, the quicker is the goal attained. If the absolute or a smaller individual maximum dosage is reached, the intervals are increased (8, 10 ,12, 14 to 28 days), given for months, so that the treatment may last for months and even years. The dosage is controlled by the febrile and general reactions. Local reactions may be avoided with the pure doses of B. E. by diluting it with physiological saline solution. Nonspecific remedies should also be used as adjuncts in the treatment. For general practitioners, especially those in the rural districts, the solution of B. E. can be properly diluted ready for use in series.

An Interesting Case for Diagnostic Röntgenography.—Holzknecht, Lenk, Pordes, Kriser, and Winternitz (*Wiener klinische Wochenschrift*, March 30, 1922) report a case which showed a fistula closely behind and below the greater trochanter. The question arose whether the focus of suppuration was in the right hip joint or in the sacrum. The röntgenogram without the use of a contrast medium filling the sinus revealed a destructive process with absorption and sequestration at the body of the first sacral segment, at its left and apparently anterior half, but the right hip showed no pathological condition whatever. The clinical examination gave no definite information as to the site of the involvement. A röntgenogram of the fistula filled with a contrast medium in the anteroposterior direction showed a sinus running obliquely inward and upward, with a short branch running toward the femoral neck, and the sinus then followed a straight course to the body of the second sacral vertebra where there was a cavity; the question of the involvement of the hip remained unsettled. A transverse exposure of the sacrum and hip with a contrast medium filling the sinus revealed the sinus to be behind the femur, running upward. The previously described branch of the sinus seen in the anteroposterior plate of the femoral neck, became lost in the main tract and therefore lay in the frontal plane. The sinus left the pelvis in the region of the great sciatic foramen and emerged near the great trochanter.

End Results in Obstetrics.—C. J. Andrews (*American Journal of Obstetrics and Gynecology*, May, 1922), going over 150 private case records, found a comparatively large number of instances of retroverted uterus at "discharge examinations" after labor. He urges that obstetrical cases should be not finally discharged until the uterus is in position, if this can be secured by simple office treatment. For replacing the uterus he uses a method suggested by J. C. Hirst in which the double tenaculum is first placed on the anterior lip of the cervix and the fundus released by gentle traction. The tenaculum is then held by an assistant, while the fundus is lifted and held forward by two fingers in the vagina. The assistant now pushes the cervix downward and backward, and thereby assists the other hand on the abdomen in catching the fundus and bringing it forward. This maneuvre makes it unnecessary to use the knee chest posture and is much more effectual and satisfactory. After the uterus is replaced, it is in some cases let alone, while in others a hard rubber pessary is used.

Proceedings of Societies

AMERICAN BRONCHOSCOPIC SOCIETY.

Fourth Annual Meeting Held in Atlantic City, N. J., June 1, 1921.

The President, Dr. HENRY L. LYNAH, in the Chair.

President's Address.—Dr. LYNAH, in his address as president, said he thought that attention should be called to the object of the society. Members were wanted, particularly those practising bronchoscopy, direct laryngoscopy and esophagoscopy. Of course those members who were taking courses with Dr Jackson, Dr. Forbes or the chairman, became proficient in bronchoscopy, laryngoscopy or esophagoscopy in a short time, but it meant that they must practice for a long time after they received instruction. Among recent amendments to the constitution was one which provided that a man should present a thesis when applying for membership in the society, as in the American Laryngological and Triological, and that would now be required. It would also be a good plan to have each man present something on endoscopic work to show that he was familiar with the work on that subject. The remainder of Dr. Lynah's brief address dealt with the matter of changing the name of the society from the Association of American Peroral Endoscopists to American Bronchoscopic Society.

Bronchoscopic Cases of Dental Origin.—Dr. H. H. FORBES, of New York, read a paper on this subject which appears on page 738 of this issue.

Dr. THOMAS H. HALSTED, of Syracuse, in discussing the subject, cited a case in which a tooth was inhaled and remained in the lung fourteen years. The patient, a man over fifty, came to him, he said, two years ago, complaining of fetid expectoration, which was profuse. Suspecting a foreign body, inquiry was made regarding its possibility, but only after much questioning did it develop that cough followed extraction, under ether, of several teeth fourteen years before; his trouble evidently began at or about this time. An x ray was made, and, as in Dr. Yankauer's case, there was much difference of opinion as to whether the plate showed anything abnormal. Dr. Halsted said he thought he detected a shadow at the junction of rib and sternum, but the röntgenologist thought there was nothing abnormal. A second plate was not much more satisfactory but he was convinced there was a shadow, and advised bronchoscopic examination and removal if possible. Bronchoscopy, under ether, was done and a stricture with cavity beyond found, but the foreign body was not located. It was the most difficult bronchoscopy in many respects that he had had. Cough was uncontrollable, dyspnea serious and threatening, so that it was a relief to have him leave the table alive after an hour's fruitless effort. Dr. Halsted referred him to Dr. Chevalier Jackson, who saw him a month or so later. He confirmed the diagnosis, and operated, finding the stricture and cavity, but not the foreign body. He also had a very serious time with the patient. A second operation by Jackson six weeks later was more successful, dilating the stricture and removing a part of the tooth. A serious cardiac disturbance developed following the second operation, necessitating his being in bed for weeks. However, on a subsequent operation, Jackson removed more tooth particles, the patient making a satisfactory recovery, with loss of the fetid expectoration and cough.

Dr. Halsted cited a second case, which was suggested by Dr. Murphy's case of a foreign body remaining in the lung giving rise to no symptoms. A child, aged thirteen years, while holding a clasp brooch in her mouth inhaled it and it disappeared. This was three years before he saw her. There was no spasmodic dyspnea at the time of inhalation, and no cough. She was alone at the time and on her mother's return, an hour later, she was taken to the family physician, who found no evidence of its presence and suggested that it had been swallowed. The stools were watched for some days, without result. Nothing happened, and the girl went on without symptoms, though the mother, a trained nurse, was uneasy. During the following six months the child was taken to the doctor a number of times for examination, and was always assured that there could be no foreign body in her anatomy, and that it had doubtless been vomited and lost. For the first time symptoms developed six months ago, a wheezing with colds, lasting a few days. Three months ago the wheezing became definitely asthmatic. Foreign body was still unsuspected. The day before Dr. Halsted saw her she was taken to Clifton Springs Sanitarium, where an x ray was taken and showed a bar pin in the left lung, between the seventh and eighth ribs, the open point directed upward. She was referred to Dr. Halsted for operation. The diagnosis was clear. Under ether, upper bronchoscopy was done and two of the smaller bronchi found filled with granulation tissue beyond a stricture. Unable to see or grasp the pin a second operation was made a week later. The stricture was now dilated, the pin found and grasped and removed. It proved to be a clasp brass pin an inch and a quarter long. The pin was open, point directed upward. The child made an uninterrupted recovery, returning home at the end of a week.

Dr. ELLEN J. PATTERSON, of Pittsburgh, said she had had one interesting case, a man, who came to her a year ago with a history of having had an attack of influenza in February, 1920, from which he had not recovered. A radiogram showed a lung abscess and a foreign body. When she looked at the plate she asked whether he had had any dental work done. He said he had had some teeth extracted about seven years before and that he also had had some work done in December, 1920. He was perfectly well until the attack of influenza, after which he lost weight, had profuse expectoration, and daily elevation of temperature. Before radiography the tentative diagnosis was tuberculosis with negative sputum. On bronchoscopy a tooth with an amalgam filling was found. The patient made a prompt recovery as far as his acute symptoms were concerned. He went to the Adirondacks for the summer and resumed his business in the fall.

Dr. Sidney Yankauer, of New York, said he had had two cases of foreign body of dental origin which were of special interest. One was that of a man who inhaled into the left upper lobe a dental broach. Numerous attempts were made to get the foreign body out, but without success. The surgeon in charge of the case finally decided to get at it by the external method. He did a thoracotomy and got the foreign body between his fingers, but before he could cut down to it the vessels at the hilum began to bleed, and bled so freely that he had to tie off the lobe and take the whole lobe out. The patient died. In the second case the patient had inhaled a portion of tooth which was extracted under general anesthesia. He told the doctor in charge this accident had happened but his statement was disregarded. He was sick for about three months. Finally he was told he had carcinoma and he was brought to Dr. Yankauer who bronchoscoped him and removed the foreign body. He removed the foreign body and granulations which had formed around it and irrigated the man's lungs at the same sitting. This was the only time he bronchoscoped him. The patient made a complete recovery in about six months. The interesting and instructive part about this case was the man had a stack of x ray plates two feet high and in none of them could one see any sign of a foreign body. After the foreign body was removed and its shape noted one could hold up the x ray plates and see the tooth in every plate. But the tooth cast such a weak shadow that it was confused with markings around the hilum of the lung.

Dr. John W. Murphy, of Cincinnati, said he thought it was rather remarkable that these cases were not seen more frequently considering the ease with which a foreign body could be inspired. When a foreign body of dental origin was inspired, if there were no symptoms the natural belief was that it had passed on into the stomach and no further attention was given to it. He had had two cases of this character; in both of them there were no symptoms whatever when the object was first inspired. In one case he had been consulted five days after the tooth had been lost during the extraction, but was supposed to have passed into the stomach as there were no symptoms of it being in the bronchi. However, an x ray at the end of five days showed the tooth located in the right bronchus just opposite the eighth rib. An attempt at removal was made under general anesthesia, but all the tubes were too short. The following day Dr. Iglauer was called in and with a longer tube the tooth was removed under local anesthesia. In a case which Dr. Murphy had seen recently, the clasp which was holding a molar tooth was inspired. The dentist was extracting it with some difficulty, when he dropped it from his forceps, and it disappeared. No symptoms whatever were present. On Dr. Murphy's advice an x ray was taken when the foreign body was discovered in the right bronchus opposite the seventh rib. The patient was a woman about sixty-four years of age, and she was rather reluctant to have even the x ray picture made of the foreign object. She came to the office and was given a local injection of morphine and atropine before getting ready to make the extraction. As the nurse was bringing her into the operating room she had a paroxysm of coughing and when she stepped into the room she handed Dr. Murphy the foreign body which she had coughed up. At no time had there been any cough or other symptom. He believed it was important that the attention of dentists should be called to the danger of this and the greatest caution taken in working about the mouth with fillings and foreign bodies as they are very apt to be inspired. When they were inspired they should not always think that they had passed into the stomach, but in every case he believed an x ray should be taken at once as the sooner these cases were seen and an effort made at extraction the more certain was success.

Dr. H. H. Forbes, in closing the discussion, expressed his appreciation of the kindly discussion of his paper. The last case had been presented as much for an opinion of the steps taken as to tell the result. When the foreign body, which was a portion of amalgam filling, was seen in the x ray picture, one realized how small a body one had to search for. Feeling that every moment the foreign body might work further and at the same time feeling that the possibilities of a solid body being coughed up were very small, he immediately passed the bronchoscope. Dr. Lynah and Dr. Imperatori had later seen a case with him and both felt that the second attempt was wise and this was done but he could not find the foreign body. If the patient had not coughed it up, or it had not disappeared, possibly fluoroscopic bronchoscopy would have been tried. He had used this method in a number of cases and Dr. Lynah had assisted in some of them; it worked out very well, and he believes the method should be made use of in these cases of very small foreign bodies. In reference to the gold crown: the dentist with whom the accident occurred told me he would never attempt to put on another gold crown without putting on a rubber dam.

Treatment of Suppurative Conditions of the Lung.—Dr. T. E. Carmody, of Denver, Colo., read a paper on this subject which is published in full in this issue of the Journal, page 742.

Dr. Henry L. Lynah, of New York, said he agreed with Dr. Yankauer about foreign body abscesses. They always improved, but not always got well for some years afterwards. Dr. Dean's assertion was correct. After the foreign body was removed, in about a month that patient was pronounced cured by many expert laryngologists, but if followed for a time it would be found that he was not cured. He coughed up pus and if bronchoscoped a stricture would be found. If bronchoscoped again and the stricture dilated he would eventually be cured. In a young boy with a tack in his lung, who had rib resection for drainage, it was a year after bronchoscopic removal that he had recovered. Dr. Forbes rapidly dilated the stricture before there was any improvement. The operation was done some two and a half years from the time Dr. Lynah saw the case; the patient recovered. Dr. Arrowsmith had had a very serious case in which the patient eventually recovered under the Yankauer treatment. Dr. Lynah said that the cases which had particularly impressed him were those in which the patients had suffered from stenosis of the bronchi. In some there was edematous stenosis, with granulations, which bled. He was not speaking of abscesses and erosion

of vessels—but usually hemorrhage and ooze came from granulations. If the granulations were removed and the stenosis dilated the patients were bound to improve. As regards the injection of bismuth into these abscess cavities, this was never done until the case had been thoroughly aspirated and reradiographed. They tried to localize the abscess by that means and a lung absolutely soaked with pus could be cleared up. The patient should then be sent to the radiographer, and after localizing the abscess bismuth mixture injections are made, endeavoring to inject that bronchus from which pus is oozing. Dr. Yankauer mentioned that overflow of bismuth would go into healthy tissue. That occurred in early cases, but by making applications of flexible collodion leakage was prevented. Some would leak out of the bronchus or the main branch. In animals leakage occurred when the injections were made forcibly. Injections should never be made forcibly. The bismuth mixture should go in slowly, and the patient then turned on his side to allow the mixture to gravitate into the cavity. It disappeared much faster from the abscess cavity than from the lung structure. In regard to prognosis in these cases, patients must be followed from time to time as to the amount of expectoration before they can be pronounced cured. Dr. Lynah said he had thirty-eight cases. Out of the fifteen in which localization of the abscess had been studied by injection, nine of them followed tonsillotomy. If one got tonsillotomy cases early they cleared up early. Personally, he believed these cases were all aspiration pneumonia when seen early enough.

Dr. Sidney Yankauer said he thought that the cannula which he used for the injection was very easy to make and could not leak. Take an ordinary straight cannula and fasten a piece of wire so that it projected two inches beyond the cannula; over that put rubber tubing about the size of the tubing used over the ear pieces of spectacles. The wire acted as a guide and one could go into any one of the bronchi and it would not leak. He said that Dr. Carmody's paper had interested him exceedingly, but he thought one should distinguish between lung abscesses due to foreign body and those due to diseases of the lungs. The abscesses due to foreign bodies were much more amenable to treatment than those due to pulmonary disease and after the removal of the foreign body most of those abscesses had a tendency to get well spontaneously. The same thing was true in lung abscesses following tonsillectomy, in a large number of which the patients recovered. Investigations made at Mt. Sinai Hospital showed that the lung abscesses following tonsillectomy usually occurred nine or ten days after the operation, and this happened with such regularity that they assumed that there was a specific organism which caused them, but it had not yet been isolated. Many of these patients got well and it might be, as Dr. Mosher said, that everybody was not as truthful as the Boston men, because in private conversation with various men he had occasionally heard of a lung abscess following tonsillotomy. He thought there were many more such cases than had been recorded. The patients who got well after three or six months were not likely to get well spontaneously. They had succeeded by irrigation in curing cases of lung abscesses following tonsillectomy, which had existed as long as a year. The method which they used consists of repeated irrigation with iodine solution. He hoped to hear from Dr. Lynah what his latest experience had been. Personally he had been afraid to place a quantity of the foreign body into the lungs and in some of Dr. Lynah's cases the bismuth had not been deposited in the abscess, a good deal of it had run over into healthy lung and remained in the healthy lung much longer than it did in the abscess cavity and it would be extremely interesting to know what had become of it. If bismuth injected into lung abscess would act as a permanent antiseptic and help to cure these cases, it would prove to be a most valuable method. Perhaps other drugs could be used. He had tried once to inject a weak iodoform emulsion into these cavities and it created a marked reaction and he had not tried it since. The iodine solution, which could be increased in strength until it reached about 1-500, seemed to have given the best results, although the percentage of cases he had completely cured was very small. That was perhaps partly due to the fact that the patients referred to him had been given up both by the internist in the hospital and then by the surgeons. When they are beyond the reach of operation and the internist could do no more, Dr. Yankauer said he tried to cure by washing out. Most of the cases were of long standing, quite a number extensive bilateral bronchiectasis. They had succeeded in bringing about great improvement in these patients so that they could go back to work, coming in once in two weeks or once a month for bronchioscopic treatment.

Dr. Yankauer thought it might be of interest to state that these patients were always cocainized for bronchoscopies; it had not been possible to pass a bronchoscope without cocainization. The fact of greatest importance in this connection, however, was that the bronchoscopists were beginning to get hold of these cases, and if all bronchoscopists would impress upon internists in hospitals the value of bronchoscopic examination and treatment in the various pulmonary diseases, the usefulness of the bronchoscope would be greatly extended. Dr. Yankauer said he was convinced that in the future the main use of the bronchoscope would be for diagnosis and treatment of intrathoracic diseases, because the proper treatment for foreign bodies was the prophylactic treatment rather than the removal.

Dr. Lee W. Dean, of Iowa City, Iowa, said that the cases of chronic abscess of the lungs that he had treated had been referred to him by internists and they had been very proud of the results which were secured. As a matter of fact, with the exception of one case, in which there was a quadruple Wassermann reaction, and in those cases where a foreign body was present in the lung, the final results of treatment had been very poor. Our patients were all ex-urban and where no treatment had been given for two years the patients had had much discomfort. When the bronchoscopic treatment was continued the patients were much better.

Early Hodgkin's Disease.—Dr. Lee M. Hurd, of New York, reported a case of Hodgkin's disease in which endoscopy led to the diagnosis. (See page 746.)

Dr. Sidney Yankauer, in discussing Dr. Hurd's paper, said that the case was extremely interesting, particularly as it illustrated the value of bronchoscopy in chest conditions. They had been able to make diagnoses of pulmonary tumors in a number of cases—about eleven or twelve now. The extrabronchial tumors, such as this one was, were known to be very difficult to diagnose bronchoscopically, because one did not see the tumors and had to judge of the presence of a tumor by the manner in which it compressed the trachea and bronchi. Two interesting cases were seen in Mt. Sinai Hospital about two years ago. In one case a tumor was distinctly shown by the x ray, but the diagnosis could not be made. It lay between dermoid cyst or the mediastinum and a neoplasm. Dermoid cysts occur in the anterior mediastinum and malignant neoplasms in the posterior mediastinum. With the bronchoscope it was possible to ascertain that the pressure was made on the anterior wall of the bronchus and on operation the diagnosis of dermoid cyst was verified. Shortly after that a patient was sent into the hospital with a diagnosis of dermoid cyst. Radiographic picture could not state whether anterior or posterior of mediastinum. The bronchoscope in this case showed the tumor to lie behind the bronchus and dermoid cyst was excluded and the patient ultimately died and showed presence of malignancy.

It was quite possible, of course, to be mistaken in the diagnosis of such tumors. He mentioned particularly the fact that a lung abscess might sometimes exert pressure on a neighboring bronchus, not on the bronchus which entered into the lung abscess, but some other which it approached, and in this way the bronchus might be constricted by an abscess cavity. He had seen such a case and had the condition verified at autopsy. Sometimes large growths were observed over the lung in which diagnosis could be made without the bronchoscope, but in which, with the bronchoscope, one could see some interesting pictures. In one of these cases the right bronchus was so tightly compressed that the bifurcation of the trachea could not be seen, and it was only with the greatest difficulty that its location could be made out. It was a large tumor which filled the whole chest. Medical men should have impressed upon them that in these cases a great deal can be learned through the bronchoscope even in cases where the tumor itself cannot be seen. They must also learn to overcome their fear of bronchoscopic examination. In the early days of bronchoscopy many more accidents happened than now. Nowadays with large numbers of men doing bronchoscopy skilfully and under local anesthesia the examination did not greatly incommode the patients; it did not hurt them at all, and the medical men should be impressed with that fact.

Dr. Henry L. Lynah, of New York, said that the subject of mediastinal tumors was exceedingly interesting. He had seen five such cases of mediastinal tumor. In one case they did not have a tracheotomy tube long enough and used a rubber tube and passed it down and turned the tube to the right as far as possible, getting the rubber tubing into the right main bronchus. These tumors were absolutely inoperable.

Dr. H. H. Forbes, of New York, said he thought the subject was very interesting and it brought up a case of a nurse who gave a positive blood picture of Hodgkin's disease. She was having difficulty in swallowing. The interesting possibility was pressure of enlarged glands not seen by x ray. In addition to the difficulty in swallowing, there is an adductor paralysis of both cords. Bismuth paste by esophagus went down pretty well until the crossing of left bronchus, and at that point there was the beginning of a pouch formation. Whether there was a pouch and tumor and blood change or enlarged mediastinal glands they did not know.

Result of the Use of Heat Hyperemia in Esophageal Stricture.—Dr. Lee W. Dean, of Iowa City, Iowa, read a paper on this subject.

Dr. Robert C. Lynch, of New Orleans, in discussing Dr. Dean's paper said he had been dilating these strictures for the last seven or eight months. He reported the case of a little girl with five strictures in which he had dilated, or had attempted the dilatation by forcible means, working her up on two occasions to No. 35 Mosher's instrument, and keeping her under dilatation daily for a period of time, packing the ordinary wax bougies every day for a period of three or four weeks, on account of some family disturbance the routine of bringing the patient back to the hospital was broken and the little patient was allowed to go for three or four weeks. When the esophagoscope was put in and by working up to dilatation so that the child could eat soft food comfortably, something occurred in the household which prevented her returning. Then dilatation with heat bougies to 45° was started and an esophagoscope was put in. It was found that while the thermometer registered 45° the bougie did not seem to be nearly so hot and after a little while it was found that the esophagoscope began to get quite warm. The esophagoscope was really getting most of the heat and the consequence was the heat was being distributed above the stricture, not in it. Feeling that it would be possible to get down to the stricture with the naked dilator without the aid of the esophagoscope, knowing the lay of the land, they put in the dilator and ran the heat up to 45° C. and kept it there for half an hour. The patient was very tractable, she did not seem to mind manipulation very much. She would lie with secretion running out of her mouth, so that we had evidences of marked increase in the secretions and considerable edema produced around the stricture. After the application for half an hour of this hot dilator, she was esophagoscoped and the area of the upper portion of the stricture was found to be edematous. It was too small to permit the esophagoscope to get through. After using this for a period of say every other day for about two weeks it seemed to us that the strictures remained open for a much longer time. That is, the intervals between dilatation could be lengthened very much and the patient still kept on soft food. She had reached the point where she had gained materially in weight and was on semisolid food. She could eat boiled rice now and coarse grits and soft boiled eggs and things of that sort without difficulty. When she first came only water would go through and she was much emaciated. In

her case the heat had helped materially. Dr. Lynch said that they had had four other cases of esophageal stricture and all patients were still living. In these cases the heat had softened the tissues much more rapidly than was possible by other means. The process was simple under the guidance of the esophagoscope. These cases were coming nearer to what was felt to be a cure than any he had treated previously, so the heat seemed to be of distinct value in cases of this kind. In two cases of stenosis of the larynx, where the strictures were small, he got a fairly large opening through the larynx and attempted absorption of this tissue by heat. The bougie was kept in the larynx for forty-five minutes at a time, running the temperature up to about 45° C. There was not much edema, apparently no reaction or disturbance either by perilaryngic or periesophageal irritation, and no evidence of esophageal irritation.

Dr. Sidney Yankauer, of New York, said he had not used this hot bougie, but he intended to use it on a stricture the kind which he was sure that no one present had ever seen. About six months ago Dr. Lilienthal at Mt. Sinai performed an entirely new operation for the removal of carcinoma of the esophagus and this had been an entirely successful method of accomplishing this very difficult and dangerous object and it was Dr. Yankauer's belief that it would be the coming operation for cancer of the esophagus. The operation was performed in the following way: First, a large flap of skin was laid across the back about two inches or more wide, and turned over, then an incision was made through three or four ribs along the spine and one of the ribs was removed for a distance of a few inches, then the posterior mediastinum was entered extrapleurally between the pleura and spine and the esophagus found, separated from the pneumogastric nerve and then the skin flap was turned into the wound behind the esophagus, brought around in front of the esophagus, out towards the other side of the wound, surrounding the esophagus and cancinoma with a layer of skin, the skin side next to the esophagus. This was left in place two or three weeks. The flap had granulated, the exposed portion of the esophagus containing carcinoma was well separated from the rest of the mediastinum. Then the esophagus was cut off above and below and the portion containing the carcinoma removed. When the wounds had granulated the flap was cut off at the base and the entire wound allowed to granulate. Following this operation a stricture occurred at the upper end of the skin flap. Dr. Yankauer esophagoscoped the patient and was able to locate the stricture, but owing to the peculiar twists and turns of the esophagus and the dense fibrous tissue it was impossible to pass the esophagoscope into the skin portion of the stricture and get below, but there was a fistula which opened into the back and through this fistula one could readily inject nourishment into the stomach, so there was apparently no stricture below. It was impossible to dilate this stricture. Dr. Lilienthal was forced to open the wound in the back and excise a stricture and this was apparently successful and the wound granulated. At the time this report was made the patient was able to swallow semisolid food. The wound in the back had not quite closed. The operation was quite a feasible one for a man as familiar with thoracic surgery as Dr. Lilienthal, and the patient stood it very well. He happened to be a comparatively young and strong individual and the carcinoma was taken at a very early stage. In an attempt to do this operation a second time, in a much older man and with a more extensive field, the patient died. I wish to call your attention to the fact that this operation is possible.

Dr. Henry L. Lynah said that in speaking of Dr. Lilienthal's case Dr. Yankauer had forgotten to say that no gastrostomy had been performed on the patient whatsoever. It was one of the most remarkable cases he had ever seen.

Dr. William B. Chamberlin, of Cleveland, asked Dr. Dean whether in dilatation, with preceding hyperemia, there was less danger of a minute or even a large tear in the stricture and elimination, in whole or in part of the danger of mediastinitis, with which they were so frequently confronted in these cases? He said he had had unfortunate results in a number of cases and was hesitant about treating strictures of the esophagus. On the other hand, there was no alternative but he approached these cases with fear and trembling because he never knew what would happen. In a recent case he dilated a lye stricture: the girl had had a previous dilatation with no untoward results. Five days later after dilatation under direct vision, with small and then with larger sized bougies, she manifested severe pain and a temperature of 105° or 106°. He thought she was going out with a mediastinitis. Ultimately she recovered. If these suggestions of Dr. Dean's would prove fruitful in eliminating this danger it would seem to be a great gain.

Dr. Harris P. Mosher, of Boston, said he thought the society should pass a vote of thanks to the genitourinary men for the number of instruments they had furnished the bronchoscopists. He took for granted that Dr. Dean made a preliminary examination of the stricture with the esophagoscope before he treated it with heat. He felt that all strictures should first be examined with the esophagoscope and their nature determined. This guided all subsequent treatment. It was his opinion that they could probably make a better start and get along faster by first employing forcible dilatation. This done he favored the use of the heated bougie. He was especially pleased to find that a new form of therapeutics was coming into esophagoscopy and esophageal surgery. He had long hoped that they might escape from the category of mere foreign body catchers.

Dr. Lee W. Dean, in answer to Dr. Mosher's question, said that all their esophageal cases were examined with the esophagoscope before a diagnosis was made. All their cases of fibrous stricture of the esophagus were first dilated under direct inspection. In the case where the unheated flexible bougies had been used, the strictures were first dilated under direct inspection, and as soon as the stage was reached where no progress was made, then the heated bougie was used. They had no filiform bougie that could be heated, consequently the heated bougie could not be used in very minute strictures. The heated bougie softened the tissue so that the stricture could be dilated, either with the heated or

the unheated bougie. In answer to Dr. McKinney's question, he said that the heated bougie should give the best result in recent fibrous strictures. This was also true in the treatment of urethral strictures. He had not had an opportunity to try these bougies on a recent fibrous stricture of the esophagus. The younger the stricture of the esophagus the more rapid was the resolution with the use of the heated bougie. Children did not object to this treatment as mentioned by Dr. Lynah. It was necessary to use a mouth gag with them, otherwise they might bite the bougie and ruin it. Recently in a child of about eight years of age the use of the heated bougie resulted in a rapid dilatation of the stricture. In this case after several weeks of treatment with the nonheated bougie they were not able to secure a good result. In one adult case of fibrous stricture of the esophagus a good result was secured in fourteen days' time. Dr. Dean said he believed this electrically heated bougie was that it was a very good thing. He was glad to have Dr. Lynah express the same opinion. He thought in every case where it was desirable to avoid any reaction in the esophagus that the heated bougie should be used first at a very low temperature and for a short time and that the temperature of the bougie and the length of the treatment be gradually increased. They had one reaction when the temperature of the bougie was too high. There was marked edema and swelling in the esophagus. This lasted, however, only about twelve hours when the esophageal opening became patent again.

Pneumoperitoneum as an Aid to the Diagnosis of Cardiospasm.—Dr. Samuel Iglauer, of Cincinnati, read a paper on this subject. It is published in full on page 745 of this issue.

Dr. Harris P. Mosher, of Boston, in discussing Dr. Iglauer's paper, said that he thought it was one of the final links in the chain of proof that an upper abdominal infection was one of the causes of cardiospasm. In reviewing ten cases of cardiospasm he had found that stricture was present in nine of them. In these cases, therefore, stricture and not spasm was the chief cause of the condition called cardiospasm. Anatomical and fluoroscopic studies had shown that the upper edge of the left lobe of the liver made a crease in the front face of the esophagus. It could often be seen in the esophagoscope as a crescentic mounding into the right half of the field. The lower end of the esophagus was practically surrounded by liver. The subdiaphragmatic esophagus lay in what could be called a liver tunnel. The shape of this determined the shape of the lower end of the esophagus. If the tunnel was narrow the lower end of the esophagus was narrowed and coneshaped, if the tunnel was wide, the esophagus flared and opened freely into the stomach. He believed that cardiospasm was due in the majority of cases to an inflammatory process involving the liver tunnel which resulted in some cases in a nearly complete weblike stricture at the beginning of the liver tunnel, in other cases in deformity of the whole of the tunnel. The liver tunnel was a peritoneal pocket which lodged beside the subdiaphragmatic esophagus the lesser omentum. Deformity of the liver tunnel was probably due to adhesions resulting from infection of the lesser omentum. It would be found that many cases of cardiospasm gave a history of some abdominal infection, like disease of the gallbladder or even of a general peritonitis.

Letters to the Editors.

A WARNING.

New York, *June 1, 1922.*

To the Editors:

Some weeks ago a tall dark young man with gold plated teeth called to see me, saying that he was the son of Dr. Albert H. Freiberg, of Cincinnati, and that while in the railroad station his ticket for home had disappeared, and he was anxious for me to assist him.

Dr. Freiberg is an old friend of mine, and the young man spoke so glibly about visiting Dr. Lovett, in Boston, and various other doctors, all of them my acquaintances, that I foolishly advanced him some money without enquiring over the long distance telephone from his father to corroborate the young man's statement. I subsequenlty learned from Dr. Freiberg that his son had not been out of Cincinnati. A few days ago I learned from Dr. Henry C. Coe, that a young man calling himself Dr. O. W. Freiberg, with the address of 3670 Nebraska Street, Cincinnati, had called on him and borrowed some money to get home.

Thinking he may be going the rounds of the medical profession, I am writing you this letter with the request that you publish it in order that if he approaches anyone else he may be apprehended.

Reginald H. Sayre.

HOME FOR AGED PHYSICIANS

New York, *May 31, 1922.*

To the Editors:

On page 687 of the *Medical Record* for April 22d I find a report upon my remarks at Albany relating to the Home for Aged Physicians. There is a misquotation which will be quite shocking to the hundreds of physicians who are annual contributors to the benefaction for their colleagues who are in distress. The statement is made that "physicians in need of a home might be sent there provided those who send them paid the bills." Hardly anything could be more out of tune with our purposes than such a statement. Physicians in need of a home do not have to pay a cent for their care if they are destitute and their bills are paid by those of us who have decided to be kind to our brothers. None of the officers of the Physicians' Home receive any salary and we are working overtime and at personal loss to ourselves because the profession as a whole is too busy to waken up to an appreciation of what we are trying to do for it in the way of kindly deeds.

If there is any physician who has been in good regular standing and who is now in need of a home, he may come to us this very day and be sent to a place where the birds are singing and the trees in flower. He may go fishing or go to church or do anything that his strength allows him to do without feeling restriction of institutional method.

Robert T. Morris.

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and MEDICAL RECORD
Philadelphia Medical Journal and the Medical News
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Gregory Stragnell, M. D., *Editor*

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NEW YORK, WEDNESDAY, JUNE 21, 1922

Miscellany.

Rectal and Vesical Incontinence Relieved by Operation.—Sheldon and Heller (*Annals of Surgery*, January, 1922) report a case of urinary incontinence and as a result of their operative findings conclude that in future they will investigate the position and shape of the bladder in all such cases. Their experience in this case and in two others of a similar nature prompts them to record the mistakes which they made in performing their first rectal operations. 1. The fibres of the gluteus maximus should not be severed, but should be detached with the periosteum at the site of insertion on the femur; 2, the muscle flap should be ample, at least an inch in diameter—even in children; 3, if possible, the nerve supply of the muscle flap should be investigated, and retained even if a large portion of the muscle must be incorporated in the flap.

The Method of Obtaining Unmixed Native Leucocytes.—Wilhelm Starlinger (*Wiener klinische Wochenschrift*, February 23, 1922) describes the following technic for obtaining human leucocytes almost without admixture of disturbing erythrocytes under conditions which completely maintain their native character: about 4.5 c. c. of blood are aspirated into a paraffined syringe and poured into a test tube containing 0.5 c. c. of five per cent. sodium citrate solution without foaming, and agitated for ten to fifteen minutes to test the power of sedimentation. Patients with diseases accompanied by albuminous degeneration are the best donors, as they provide large amounts of fibrinogen. If the spontaneous sedimentation proceeds within this time, showing a broad strip of plasma, the plasma together with the leucocytes is pipetted off into another tube. If sedimentation does not occur, a rapid and thorough centrifugalization is done and then a portion of the plasma is replaced by a solution of human fibrinogen (preferably), but if the human variety is not available, animal fibrinogen may be used. The amount of the fibrinogen to be added depends upon the fibrinogen concentration and the salt content: the greater the abundance of the fibrinogen and the less the salt, the less is required. The mixture is then again thoroughly shaken: the plasma, in both cases, contains erythrocytes in addition to the leucocytes. The elements in suspension are then removed by moderate centrifugalization and washed with an equal volume of physiological saline solution, under only moderate agitation and sedimentation: whereas formerly the erythrocytes agglutinated and underwent sedimentation, the reverse now occurs, the leucocytes now sedimenting in small clumps as a snow white deposit and the erythrocytes remain in the solution. Under the microscope, the heat from the reflecting mirror is sufficient to produce ameboid movement in the leucocytes.

Succinic Acid in the Cyst Contents of a Glioma.—Albert Corvin (*Wiener klinische Wochenschrift*, February 23, 1922) reports the case of a female, who was suddenly seized with an excruciating headache, nausea and vomiting, which persisted for three months with slight remissions; vision gradually became weaker, the gait became uncertain and there were lapses of memory. An ophthalmological examination revealed a choked disc in both eyes with foci of retinitis and paralysis of accommodation. The neurological examination showed a slight facial paralysis, absence of the lower abdominal reflexes and exaggerated reflexes in the lower extremities and a very slight paresis of the left upper and lower extremities and slight ataxia. The röntgenogram of the head disclosed a severe grade of increased intracranial pressure and erosion of the dorsum sellæ. A cerebral tumor was diagnosed but not located. The blood showed three plus Wassermann reaction and the spinal fluid reaction was negative, but there was a high cell count with positive luetic gold sol and mastix reactions; the lymphocytosis suggested the presence of a gumma of the brain. The necropsy revealed a cystic tumor in the right temporal lobe, just beneath the cortex, containing abundant yellow fluid and communicating with the lateral ventricle which was dilated. As an echinococcus cyst was suspected, the pyrrhol reaction for succinic acid was tried and found strongly positive. The histological examination of the cyst wall showed a cystic degeneration of a glioma. The combination of glioma and syphilis is exceedingly rare.

Intravenous Autoserum Therapy in Serum Disease.—Cesar E. Pico (*Semana Medica*, March 2, 1922) reports uniformly excellent results by his method which is as follows: Ten c. c. of blood is aspirated from a vein of the patient and allowed to coagulate. After five or six hours one c. c. of the serum is given intravenously, repeated every six to eight hours. Usually one or two injections are sufficient, and no untoward effects attended the method in twenty cases, while the itching, pain and other symptom of serum disease disappeared in a few hours, with a sudden drop in temperature. Six cases were given the autoserum treatment by the intramuscular or subcutaneous route without appreciable results.

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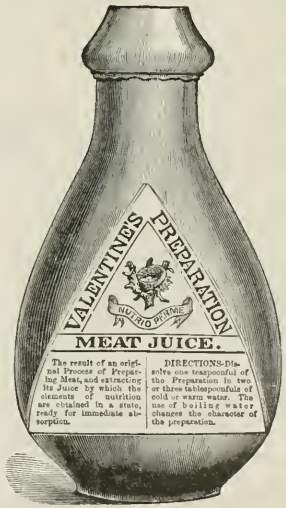
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Treatment of Acute Phosphorus Poisoning.—H. V. Atkinson (*Journal of Laboratory and Clinical Medicine*, December, 1921) produced experimental yellow phosphorus poisoning in dogs. A dog receiving a fatal dose of yellow phosphorus is completely protected against the onset of harmful symptoms by liquid petrolatum given one hour after taking the poison. Liquid petrolatum is physiologically inert and acts entirely by reason of its physical properties. Its use is recommended in the treatment of phosphorus poisoning. Since liquid petrolatum is a harmless and nonirritating cathartic, it may be used to delay absorption from the gut in many, perhaps all, cases of poisoning.

Specific Treatment of Malaria.—C. C. Bass (*New Orleans Medical and Surgical Journal*, January, 1922) gives as the standard treatment for malaria adopted by the National Malaria Committee two years ago, and since then endorsed and approved by the United States Public Health Service, the following: For the acute attack, ten grains of quinine sulphate by mouth three times a day for a period of at least three or four days, to be followed by ten grains every night before retiring for a period of eight weeks.

The Standard Treatment of Malaria.—C. C. Bass (*Medical Insurance and Health Conservation*, January, 1922) gives the proportionate doses of quinine for different ages as follows: under one year, one half grain; one year, one grain; two years, two grains; three and four years, three grains; five, six and seven years, four grains; eight, nine and ten years, six grains; eleven to fourteen years, eight grains. For the relief of acute symptoms quinine bisulphate in doses as outlined above should be given three times daily for three or four days, followed by a single dose at night before retiring for eight weeks. For those patients who have no active symptoms only the eight weeks' treatment is necessary. For patients over fifteen years of age the dose is ten grains. Regular action of intestines is an indispensable part of treatment. There is little doubt that the infecting bacilli grow in the intestine, by whatever conditions their escape is determined and by whatever routes they reach the infected organs. Probably there is a disturbance of the symbiotic balance which prevails in the healthily functioning intestine between the bacilli of putrefaction which break up the proteins and the agencies of fermentation which act on the carbohydrates. Putrefaction affects mainly the sulphur containing and aromatic groups of the protein molecule. It is controlled naturally in the healthy intestine by one of the hepatic functions; for within the liver the liberated sulphates are conjugated with the aromatic bodies producing virtually harmless ethereal sulphates, such as indican. Thus, on *à priori* grounds, the administration of reinforcing sulphates would be justified; and the use of suitable doses of magnesium sulphate and sodium sulphate is beneficial.

Alkalinization of the urine should be immediately attempted, potassium citrate in large and continued doses being the agent most frequently successful in relieving distressing symptoms. If intestinal evacuation is overexcited by this salt, alkaline bicarbonates may take its place. In a number of cases alkalinization proves ineffective in action. These cases are often amenable to the action of one or other of the urinary antiseptics of the formaldehyde type, the best of these, in the author's experience, being hexamethylenetetramine salicylate. This drug is well borne over long periods of administration; and it is usually unnecessary to combine its use with the acid phosphate of sodium, as the liberated salicylic acid renders the urine acid.

The Prepuce of the Clitoris and Gonococci.—E. Clodi and K. L. Schopper (*Wiener klinische Wochenschrift*, March 2, 1922) on the basis of their experiments and observations, believe that the gonococcus in the secretion of the preputial fold in females suffering from gonorrhea plays an important part, both as regards the infectiousness of the female toward her partner as well as in the reinfection of the female genitals and the consequent retardation of the healing process. The antigonorrheal treatment of the female, therefore, must also include the mechanical cleansing and disinfection of the preputial fold as well as the regular microscopic examination of the preputial secretion.

Spirits of Camphor in the Treatment of Furuncles.—Juan C. Dianderas (*Cronica Medica of Lima*, October, 1921) having accidentally discovered the value of alcoholic solutions of camphor in boils, gave the treatment an extended trial with uniformly good results. He used a ten per cent. solution and injected a few drops into the point of the boil and then penetrated to the base and injected as much more as possible. The core is rapidly liquefied and expelled by this method; the only prerequisite is that the vertex of the furuncle be visible on the surface, that is, it must have begun to point. The only dressing applied is collodion.

Edema of the Tongue Following Injection of Mirion.—N. Nander (*Wiener klinische Wochenschrift*, March 30, 1922) reports a case of iodism which he observed only once while treating a series of cases with combined mirion salvarsan injections. As the cerebrospinal fluid reactions were refractory to treatment, seventeen c. c. mirion were injected (twice with neosalvarsan) at intervals of two days. All of the injections were well borne until twenty-four hours after the last injection of neosalvarsan, when the patient suddenly felt a mass in his mouth, followed in one hour by marked edema of the tongue. There was no edema of the glottis, but the edema spread to both the submaxillary regions. Within two hours the edema retrogressed and within two days the condition returned to normal. Subsequent injections of neosalvarsan were well borne. The edema must have been due to a severe iodism.

Specific Therapy of Diphtheria.—E. C. Fleischner and E. B. Shaw (*Archives of Pediatrics*, October 21, 1921) show the importance of further improving therapy in diphtheria, for annually two hundred thousand cases occur in the United States with twenty thousand deaths. They urge that antitoxin should be given at the earliest possible moment. The dose should be large enough and given in a single injection. Above all, the method of administration advocated is the intravenous one, for in this way antitoxin is made most quickly available to the tissues.

To the Medical Profession:—

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Herewith is a photograph of Page 95, Vol. 11, "Diseases of Women," as edited by H. Marion-Sims, M. D., and in Dr. Sims' own words, is recorded the high esteem in which he held *Hayden's Viburnum Compound* and the "great service" rendered in treating

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DYSMENORRHŒA. 95

It has been long known that rest is most efficacious in relieving dysmenorrhœa. Some patients habitually go to bed during the menstrual process, finding so much relief from the position. There is nothing therefore new in the recommendation to rest at this time, but experience has shown that the positional treatment above described carries the effect still further. The treatment is particularly valuable in the case of young single women who are suffering from dysmenorrhœa not of such severe character as to render internal treatment imperatively necessary. And indeed I have in several cases employed positional treatment with great success where no examination at all had been made, but where the symptoms and general history conclusively showed that the patients were suffering from commencing uterine flexion.

Positional treatment is also very valuable as an adjunct in cases where internal mechanical apparatus are in use.

Palliative Measures.—Rest, the horizontal position, postural treatment, as above described, are all of first-rate importance. The warm hip-bath, temperature 100° or even higher, is to be recommended. Copious vaginal injections of hot water are sometimes found very serviceable. Ether, compound spirit of sulphuric ether, camphor, and henbane are ordinary and very useful remedies. Gin and water is a common domestic remedy. Poultices with laudanum sprinkled over them, hypodermic injections of morphia, turpentine stupes, are other remedies occasionally employed. Suppositories containing opium or morphia are very effective, but the use of opium is not advisable unless under strict medical orders. Chloral and bromide of potassium are good remedies. Guaiacum (Dewees), black hellebore (Meigs), have been strongly recommended. Colchicum, cannabis indica, and in fact every sedative and anti-spasmodic in the pharmacopœia, have been employed for the relief of the pain with more or less success.

[For severe dysmenorrhœa I have frequently found Hayden's viburnum compound of great service, given in teaspoonful doses every hour for three or four hours.]

During the menstrual period great care is required that the bowels be kept regular, that the digestive organs be in an easily working condition, and that food be adequate but not in too great quantity. It should be known that it is dangerous to use cold baths during menstruation.

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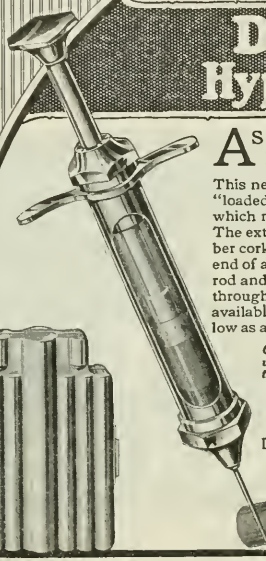

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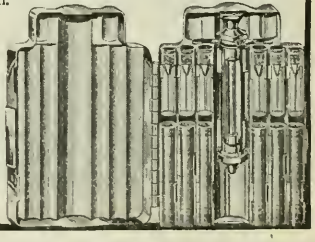

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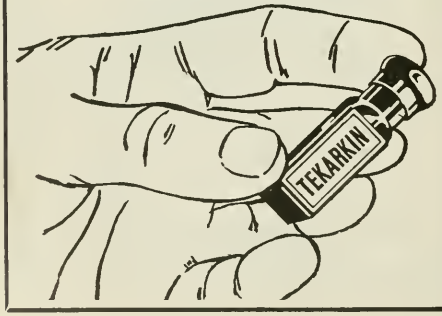

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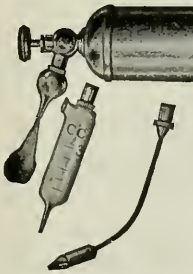

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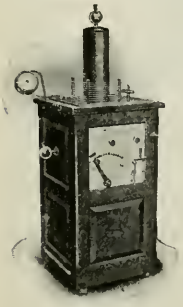

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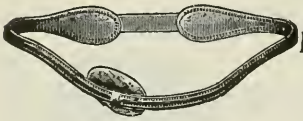

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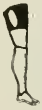

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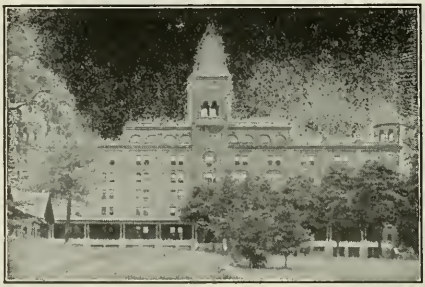

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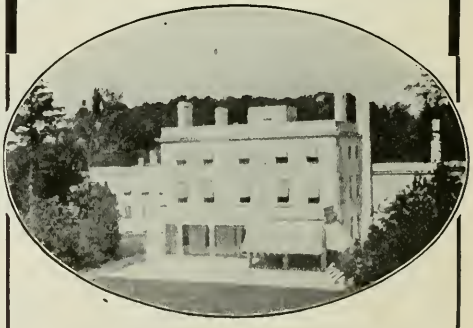

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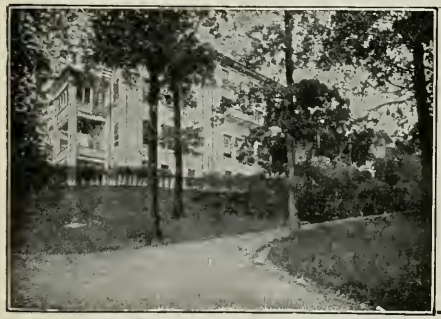

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